# IN- SERVICE TRAINING PROGRAMME FOR TEACHERS FOR IMPROVING THEIR EFFECTIVENESS

Supported by

NCERT (New Delhi)

Principal Investigator : Prof. Dr. Usha Khire

A Project Report (Final Copy)

September 2004

Jnana Prabodhini Samshodhan Sanstha
510 Sadashiv Peth, Pune : 411 030

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**NCERT (New Delhi)**
Sri Aurobindo Marg, New Delhi – 110 016

***Principal Investigator – Prof. Dr. Usha Khire***

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*Project Period (November 2000 – April 2003)*
*(Extended Upto October 2003)*

**Jnana Prabodhini Samshodhan Sanstha (JPSS)**
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# Acknowledgements

Every researcher should remember the experience of the most productive inventor scientist like Edison, that in true research 'there is 2% inspiration and 98% perspiration'. While this 98% portion mostly and explicitly depends on two factors, the situation and the people involved, the 2% also has implicit contributions from these factors. We recognize the contribution from all 100%.

The core team included Dr. Usha Khire – the Principal Investigator,
Shri. V.N. Abhyankar – Co-investigator, Smt. Devayani Pandit – Co-investigator, Smt. Pranita Jagtap – Project Fellow, Smt. Tanuja Ghatpande – Project Fellow.

The co-investigator Shri. V.N. Abhyankar with his long experience in teaching and innovative experiments in school education, participated in finalizing the content of training as well as in its conductance. Smt. Devayani Pandit participated right from the beginning – in writing proposal, and shouldered major responsibility in executing the project under the direction by Principal Investigator. She handled tool construction, data collection for survey, running the training programme and processing of data. The two P.A.s Smt. Pranita Jagtap and Smt. Tanuja Ghatpande assisted at almost all stages. Smt. Pranita Jagtap also extended her assistance in all data analysis and preparing the report. Smt. Meenakshi Gokhale offered her expertise in computer and use of SPSS for statistical analysis. Smt. Manjiri Mhaskar assisted in pains-taking job of producing the final report on computer. Smt. Rajashri More-Amale handled the tedious job of accounting under the guidance by Shri. V.D. Gurjar.

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Usha Khire
Principal Investigator

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# Section I

## Introduction, Review and Conceptual Background

### Prologue

The parent organization Jnana Prabodhini is engaged in different types of formal and non-formal or informal educational programmes. It runs a special school for intellectually superior and four other schools for the unselected, in urban and rural areas, and a variety of off-school programmes for children and youth from other schools and colleges. It also conducts special school programmes for deprived children.

In all these activities attention has to be given to capacity building of teachers and others in that role. We look at the teacher as a change agent who should be effective in motivating children and directing their learning. It is not sufficient for a teacher to know the subject and to have teaching skills. It is also essential for a teacher to have the ability for self-development and for enriching the school climate. Both these factors are congenial for students' growth.

Jnana Prabodhini has introduced innovative methods and activities for enhancing abilities of children, and motivating them for social change. In our schools learning is not restricted to textbooks. It is linked with doing and living. For the benefit of other schools short duration programmes for teachers from various schools and/or B.Ed. passed freshers are organized from time to time. Some of the JP's activities and teaching methods are introduced through these programmes. The programme participants try them in their schools. Those teachers who are effective in winning cooperation by other teachers, the school principal and management and also sometimes from parents can change the school climate and motivate children for better learning.

These conjectures based on practical experience are also supported by research (Khire, 1998). It was found that more enriched school climate facilitates development of children – gifted as well as average, and the latter group is benefitted more. To change the school climate the teacher should take initiative and form a group of other like-minded motivated teachers. Hence we felt the need for a more comprehensive training programme for teachers to become more effective individuals.

## Introduction and Overview of Literature

Teacher is the main architect of our educational system. Teachers' academic qualifications, knowledge and personality affect the school environment and the development of students.

The quality of education depends upon the following five key variables –

- The teacher
- The curriculum
- The student
- The school environment
- The teaching-learning process

In recent times, the major challenges before the country are educational expansion, universalization of elementary education and overall quality of education. The low school quality is one of the most serious and persistent problems. Besides lack of physical facilities, infrastructure and poor administrative system, inadequacies among teachers is the most important determinant of the quality of teaching learning process (Arora and Panda, 1999).

Quality education has become the key word. Lots of researches have been undertaken in the field of education since independence. Every educational commission has strived its best to minify Mecauley's impact on our educational system. Teacher education has been given due importance; in that the details of the expectations from the teacher and curricula for teacher training programmes are explicitly stated.

Many researches have been conducted with respect to teachers' personality and teacher education (Buch, 1991). There are various studies on teachers as well as the training programmes but they focus more on information giving and general methodology of teaching. Very often the motivation, commitment, temperament, empathy and other factors in affective and behavioural domain remain ignored (Buch, 1997).

The reviewer has emphasized the need for synthesizing cognitive and affective training components and developing instructional packages based on research evidence and experience, for strengthening the classroom behaviour of the teacher (Panda, 1991).

'There have been very comprehensive studies on learning, classroom climate, cognitive growth, and teaching learning processes. Many more studies are seen, which are survey type researches on personality patterns and traits, their intercorrelations and distributions. The obsession with personality is more pronounced but the thrust is not on the development of desirable personality traits in relation to environment. Studies on personality should now focus more on developing desirable traits and utilizing them for improving behaviour and performance and for achievement of values'. Attention should be given to traits like spirit of inquiry, initiative, scientific temper, and communication skills (Nayar, 1997).

The POA (Programme Of Action 1986, 1992) proposes that in the light of new thrust for the educational system, the teacher training would have to be totally revamped with a view to equip the teachers with empathy, attitude for creative and innovative work, sensitive understanding of child's behaviour, adopting play-way and activity based approach, developing school into community school where the school becomes a nucleus of several social and cultural activities of the village, understanding of how to integrate different subjects into an organized whole.

In the review of research literature on teacher education it is imperative to take note of contributions by the Saint Samarth Ramdas Swami – the Guru of King Shivaji. Ramadas Swami has elaborately dealt with qualities of a teacher and a student, and learning and teaching methods. The qualities of 'Guru' as emphasized by Samarth Ramdas Swami, based on Pancha Kosha concept included urge for knowledge, self-learning, studiousness, integration of speech and writing, balanced personality, morality, social-emotional and practical skills, reflection and also meditation. He emphasized the need based teaching method. For that he explained the methods as Q-A interactive method, Keertan (narrative wit h dramatization and poetry), play-way method, problem solving and theorization through 'exposure, reference and analysis'. The literature by Samarth Ramdas Swami is now being referred by educationists and management experts for his contributions to education, psychology and management. (Gogate, 1993, Khire, 1997)

## Conceptual Background

The Indian view of personality as seen in 'the concept of Panchkosha', and the basic principles of human development provide some foundation for the programme, so they are introduced here in brief and a more detailed note elaborating its nature and scope is given in the Appendix VII. (The training programme is not designed on this concept hence detailed note given in the appendix.)

**The Concept of Panchkosha** -Very often the word 'kosha' is translated as a 'sheathe'. But this may create a wrong impression. Panchakoshas are five aspects of personality. Through the process of development the experiential reality of human existence gets structured into five distinguished forms, as physical, functional, intellectual, emotional-social and spiritual. Indian thinkers conceptualized these distinctions as five koshas namely – *Annamaya, Pranamaya, Manomaya, Vidnyanmaya and Anandmaya.*

Annamaya kosha is physical or bodily aspect, and Pranamaya kosha is related to 'chaitanya'. It is responsible for all activity – internal and external functioning of a body and its regulation. Our physical development and interaction with the environment depend on proper functioning of Pranamaya kosha. Manomaya kosha encompasses emotions, feelings and all factors in affective domains. Vidnyanmaya kosha covers intellect, knowledge, learning, etc. All cognitive and sensory information is dealt with through Vidnyanmaya kosha. It is responsible for development of 'vivek' distinguishing between 'real' and 'unreal' and marching towards 'reality'. Anandmaya kosha explains experience beyond 'self', and the creative experience of self-actualization.

An integrated development of these five koshas is essential for happiness and elevation of human life. The concept of Panchakosha can be applied to both individual and society[1]. Though the idea of Panchkosha is mentioned and elaborated at a few places in Indian literature, a comprehensive and elaborate theorization is hardly available. The empirical distinction between five koshas is rather difficult and sometimes confusing for observation of change in specific kosha. A system of measurement based on Indian concept is not available. However, this concept is quite useful for a comprehensive development programme. It covers all areas of human development.

Footnote[1] : An educational programme designed on this concept is implemented in Jnana Prabodhini's school in Nigdi.

**Basic Principles of Human Development** - A simple extract of voluminous research on human development and layperson's implicit concept of it is put here in the form of five basic principles underlying the process of development. They are as follows –

*Development proceeds through interaction between the individual and environment.* Both the individual and environment gradually change through interactions and know more about each other. This knowledge facilitates further development.

*The process of development starts 'from within'.* Unless the motivational force is 'switched on', development does not take place. Interest, desire, need and urge make a lot of difference in utilizing the inputs from the environment.

*Development appears in different forms because it is multidimensional, and multifaceted.* On each facet we find further elaborations into multiple factors. For example, intellectual domain covers many abilities as understanding, memory, creative thinking, etc. Physical domain includes physical fitness, strength, energy, etc. Any individual may try to develop oneself on one or many such factors.

*Development can be seen as a continuous process.* The multidimensionality of development implies a large scope for continuous development. If a kind of 'plateau' or 'a stand still' appears at a certain stage on one dimension there can be a progress in different direction. Moreover, it has to be remembered that natural trajectory of growth has some active and passive periods. It means that even if no progress is seen at a certain stage, there should be periodical stimulations from the environment.

Finally, *development on multiple dimensions has to be integrated for higher level and better quality.* Integration of development leads the process to reach the higher level e.g. a sports person who brings in intellectual and emotional skills in his/her physical performance can become more successful.

Understanding and acceptance of these principles cultivate a more mature approach in conducting any intervention programme in human development.

# Section II

# Methodology

## Statement of the Problem

Designing a training programme for primary teachers (5th to 7th standard) to enhance the quality of their teaching so as to improve school climate and students' performance.

## Objectives of the Study

1) To identify the needs of teachers for improving teacher effectiveness.
2) To design and conduct a suitable programme for developing teachers' personality.
3) To verify effectiveness of training programme on the school climate and on students' performance.

## Operational Definitions

Effective Teacher – Effective teacher is a teacher who has an ability to modify the behaviour of children and the environment positively for learning. The effective teacher is also a good learner and shows integration of cognitive and affective domains in his personality.

Total Quality Teaching – Total quality teaching is a process of teaching that involves –
Creating desire for and positive attitude towards learning, Inducing motivation for self-development, Giving training for basic skills required for learning, Winning co-operation and using available resources more effectively for fulfilling objectives of teaching, And reviewing the progress.

## Hypotheses

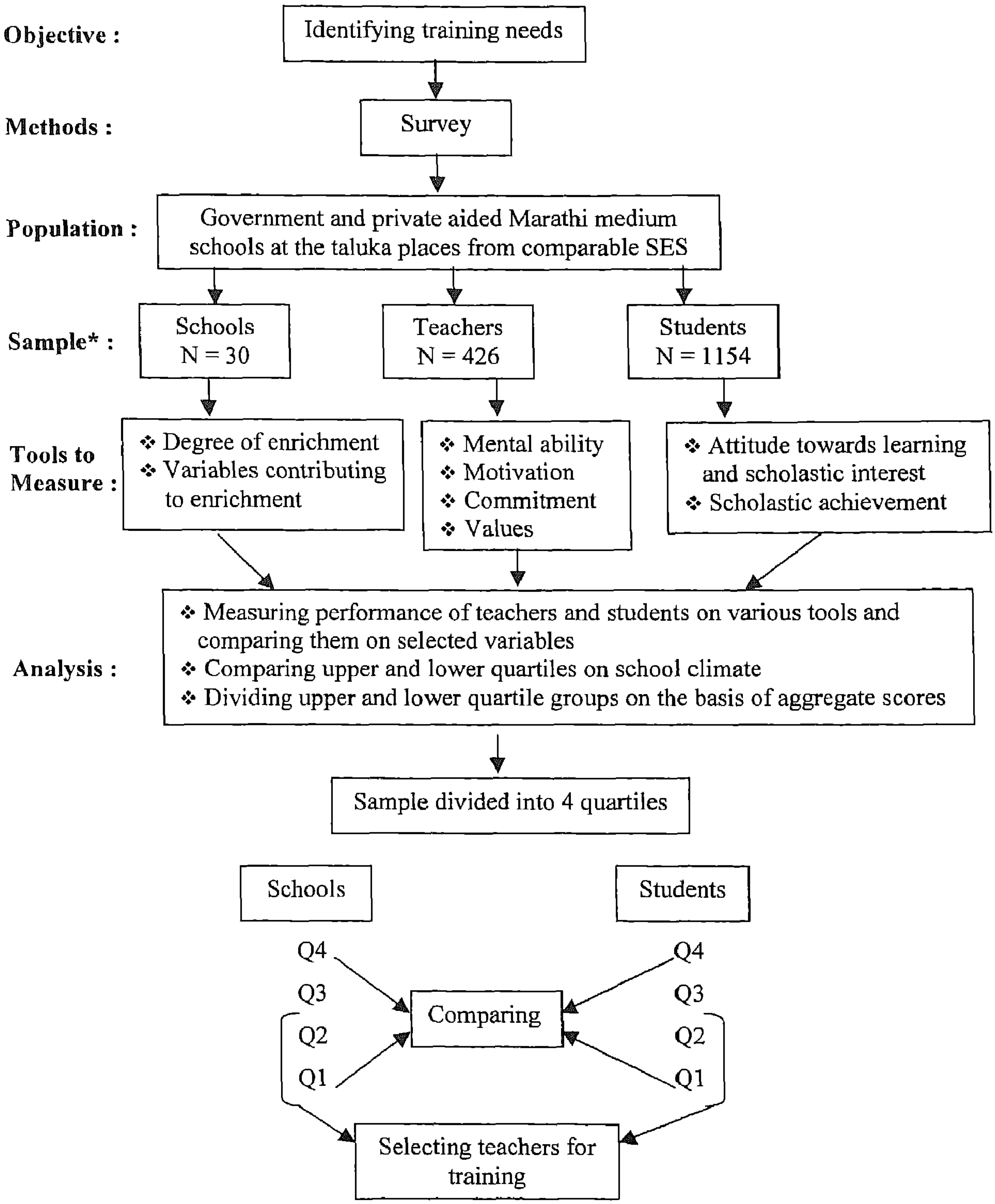
Appropriate hypotheses were set to verify the effect of training programme.

1) There will be improvement in the cognitive ability, motivation, commitment of teachers, as a result of training.
2) There will be improvement in students' scholastic achievement, scholastic interest and attitude towards learning as a result of improved quality of teachers.
3) There will be improvement in the enrichment of classroom and school environment, as a function of improved effectiveness of teachers.

## Design of the Study

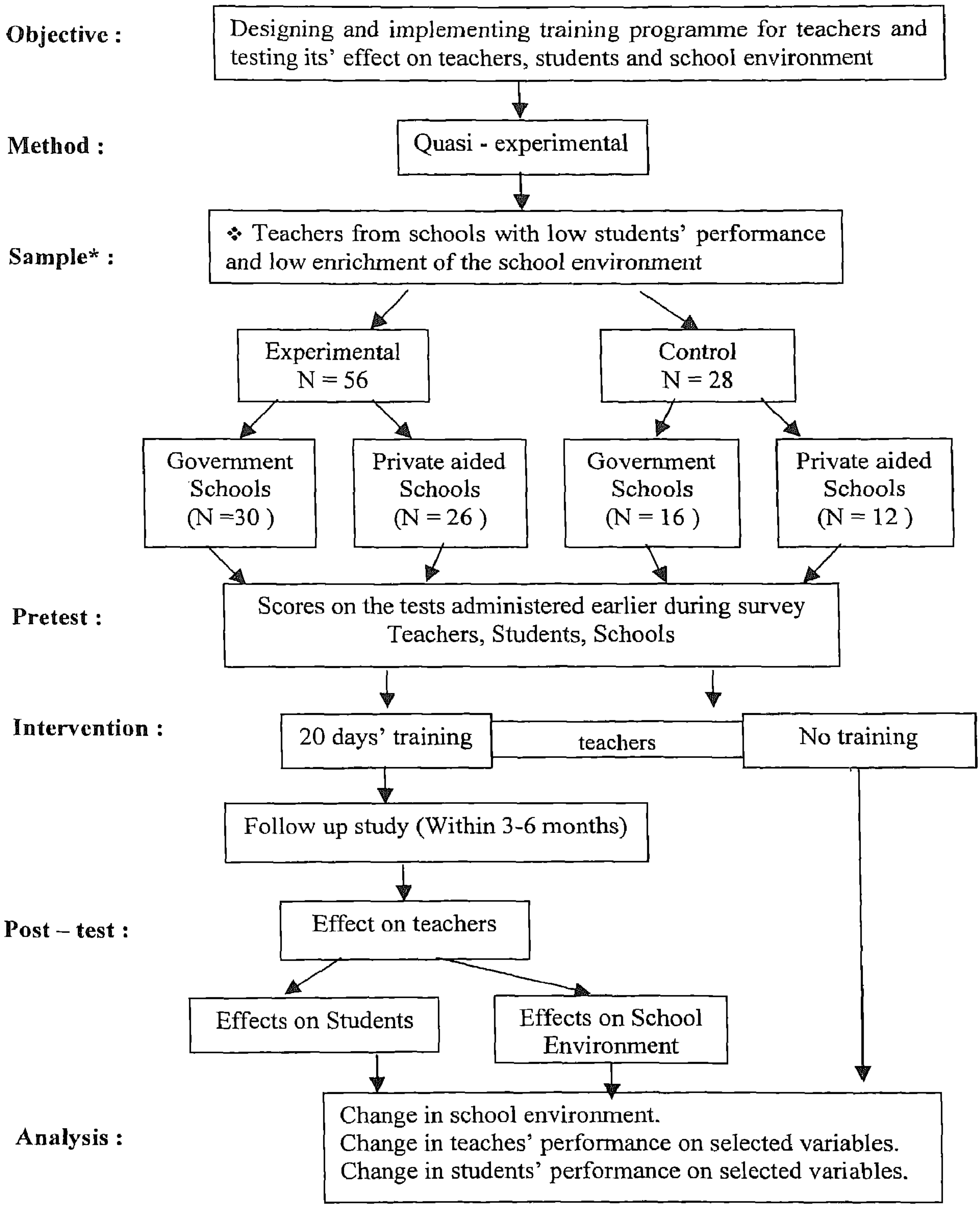
The study was carried out in two parts – 1) Survey and 2) Intervention or Training. The design and procedure for both will be clear from the flow-charts given ahead. They are described appropriately in section III and V.

## Part I - Survey


Objective :
Identifying training needs
Methods :
Survey
Population :
Government and private aided Marathi medium schools at the taluka places from comparable SES
Sample* :
Schools N = 30
Teachers N = 426
Students N = 1154
Tools to Measure :
❖ Degree of enrichment
❖ Variables contributing to enrichment
❖ Mental ability
❖ Motivation
❖ Commitment
❖ Values
❖ Attitude towards learning and scholastic interest
❖ Scholastic achievement
Analysis :
❖ Measuring performance of teachers and students on various tools and comparing them on selected variables
❖ Comparing upper and lower quartiles on school climate
❖ Dividing upper and lower quartile groups on the basis of aggregate scores
Sample divided into 4 quartiles
Schools
Students
Q4
Q3
Q2
Q1
Comparing
Q4
Q3
Q2
Q1
Selecting teachers for training

ple size was not the same in statistical analyses due to rejecting unvalid data.

## Part II – Training


Objective :
Designing and implementing training programme for teachers and testing its' effect on teachers, students and school environment
Method :
Quasi - experimental
Sample* :
❖ Teachers from schools with low students' performance and low enrichment of the school environment
Experimental N = 56
Control N = 28
Government Schools (N =30 )
Private aided Schools (N = 26 )
Government Schools (N = 16 )
Private aided Schools (N = 12 )
Pretest :
Scores on the tests administered earlier during survey Teachers, Students, Schools
Intervention :
20 days' training
teachers
No training
Follow up study (Within 3-6 months)
Post – test :
Effect on teachers
Effects on Students
Effects on School Environment
Analysis :
Change in school environment.
Change in teaches' performance on selected variables.
Change in students' performance on selected variables.

The sample size was not the same in statistical analyses due to rejecting unvalid data.

# Section III

## Survey

The survey was mainly conducted to identify the training needs of teachers for improving their effectiveness and to select the sample for the training programme. It involved a study of teachers, students and the school. The first step was to select proper behavioral variables and then to procure or construct empirical measures for their study. A brief account of tool selection or construction is given ahead and the sample of each tool is given in the Appendix VI.

### Tool for Schools

#### School Environment Questionnaire

This questionnaire measures quality of school environment as related to students' development. The school environment is evaluated by five teachers and the principal. The score is derived from their evaluations.

There are two parts. Part I consists of 28 items and requires half an hour. Most of the items are in the form of rating scale. Some are open ended. This part measures teachers' opinions regarding learning facilities, teaching methods, co-teachers and students' attitude towards school.

Part II consists of 10 items and requires one hour or more. Most of the items are open ended. This part measures physical facilities in the school and range of curricular and extra-curricular activities including competitions.

Separate objective scoring keys for part I and part II are prepared. Inter-judges agreement is sought for openended qualitative responses. In all 8 scores including a total score, are obtained. They indicate

1) Teachers' perception about physical and psychosocial climate of the school.
2) Curriculum based knowledge through off-classroom activities.
3) Knowledge outside curriculum

4) Psychomotor Skill
5) Socio-economic and cultural awareness
6) Religious and philosophical awareness
7) Expressional skills and emotional control
8) Total of 1 to 7

It is a widely used questionnaire for which content validity was established by consulting 15 psychologists. Correlation of teachers' evaluation of their schools has been reported to be 0.46. A moderate correlation is interpreted as a wider coverage of school environment by different teachers.

## Tools for Teachers

### Tests of Mental Abilities

Four tests based on SOI were selected. They measure cognition, divergent thinking, convergent thinking and behavioural reasoning as mentioned below –

i) Cognition of Semantic Implications (CMI)
ii) Divergent Semantic Relations (DMR)
iii) Convergent Figural Classes (NFC)
iv) Cognition of Behavioural Relations (CBR)

There were two more tests initially selected but omitted after pilot study. They were –

i) Divergent Figural Unit (DFU)
ii) Divergent Behavioural Implications (DBI)

### Teachers' Motivation

Two tests were used for motivation.

I) In the first test the three kinds of motivation which are thought to be of the utmost importance for teachers are taken into consideration. They are Achievement Motivation, Affiliation Motivation and Power Motivation.

There are 14 items in this test. Each item is comprised of one statement of each kind of motivation and one neutral statement. Thus there are four statements. The teacher is supposed to choose one statement most preferred for oneself as an individual and one statement on which he/she emphasizes more while teaching students or in other words, the statement showing the expectation from students.

II) Another questionnaire for measuring intrinsic and extrinsic motivation consists of 14 items, each having two alternatives related to two kinds of motivation.

### Values Check List

Values were operationally defined as the core traits of a person which are reflected in day-to-day behaviour and which make some impact on decision making.

A very elaborate list of traits which were thought to be of the utmost importance for teachers, was prepared referring to the qualities of the effective teacher (POE, 1986) and characteristics of 'Wordly Guru' as given by Samarth Ramdas (Gogate, 1993, Khire, 1997). Teacher trainers and education experts (N = 6) were consulted for finalizing the list containing 20 traits. The teacher has to choose ten traits strongly observed in oneself and then choose five traits and write an incidence or decision in the life, showing the preference for that trait. These five are taken into consideration for statistical analysis. To build a proper judgement the teacher is also asked to indicate ten values less preferred and again to shortlist five least preferred.

### Commitment

This tool is based upon the assumption that every individual is committed to 'something' with varying levels. It is designed as per Bloom's Taxonomy of Affective Domain. Bloom has given five major steps on the hierarchy of educational objectives for affective domain. They are –

Major steps Substeps

1) Receiving - 1) Awareness 2) Willingness to receive 3) Selected or controlled attention
2) Responding - 1) Acquiescence in responding 2) Willingness to respond 3) Satisfaction in response
3) Valuing - 1) Acceptance of a value 2) Preference for the value 3) Commitment
4) Organisation of value complex } Steps 4 and 5, the higher level steps
5) Characterization } are omitted from this questionnaire

Statements in the test of commitment are based on these nine substeps. A group of three statements (one from each substep of every step) is made and the teacher has to rate the statements as 3 – strongly observed, 2 – moderately observed, 1 – rarely observed (in the self) and N.A. – not applicable. In all there are 18 items in the test, finalized after the pilot study.

(There was another test tried in the pilot study. It was based on Brubaker's concept of 6 levels of commitment. The test presents different areas of commitment and the respondent has to write some incident in one's own life to support the choice. The test was found to be rather complicated and not clear for teachers. Hence it was omitted.

## Tools for students

1) Scholastic Achievement Test (SAT)

The scholastic test is comprised of objective type questions in language (Marathi), arithmetic and mental ability based on the syllabus of 4th grade and 7th grade scholarship examination. The items were selected after inter-judges' agreement for appropriate content and estimated difficulty. The initial version has been revised after pilot study. The final test includes 49 items; 20 for language, 14 for arithmetic and 15 for mental ability.

2) Students' Learning Orientation Profile (SLOP)

This is a standardized questionnaire by Jayalaxmi Indersen (Pestonjee, 1991). It measures seven factors of the students' orientation for learning. They are –

| | | |
|---|---|---|
| 1) | PEDOL | Personality Development Orientation in Leaning |
| 2) | ADOL | Assessment Domination Orientation in Learning |
| 3) | INJOL | Intrinsic Orientation in Job related Learning |
| 4) | APAL | Apathy Towards Learning |
| 5) | INVOL | Involvement in Learning |
| 6) | EXOL | Extrinsic Orientation in Learning |
| 7) | SIGOL | Significant other Orientations in Learning |

It is a four point scale and consists of 56 items (8 items for each factor).

## Drawing the Sample

A very careful, elaborate planning was done taking into consideration the crucial importance of the sample in the present project. The procedure for selection of schools, students and teachers is given ahead.

Schools

The list of Marathi medium primary and secondary schools in Maharashtra, was obtained from SCERT. Tahasils and districts from Southern and Western Maharashtra were divided into three categories, as developed, developing and under-developed after obtaining the socio-economical and cultural information about them through available records and discussion with the experts. The geographical location was also taken into consideration in order to get the representative sample. Two hundred schools were selected from the pre-decided places.

Primary information forms were sent to the school (N = 200), asking about questions like, the foundation year, number of classes and divisions, number of students in each class, total number of teachers, facilities available in the school, whether aided or non-aided etc.

Out of these 200 schools, 80 schools replied back. From these 80 schools, 30 schools were selected for the final testing. The list of schools is given in the Appendix II. Criteria for the selection of schools included –

- geographical location
- either private and aided, or government school (M.C. or Z.P.)
- having both boys and girls
- having classes for 5th to 7th standards. Most of the schools were upto 10th standard. Two private schools had upto 7th standard but were attached to secondary schools.

Students

Ten percent students were selected randomly from all classes of standard 5th to 7th using predetermined order as 'every tenth from boys and girls'.

Teachers

All teachers teaching to standards 5th and 7th were included in sample.

Table 3.1 presents the summarized view of the sample.

**Table No. 3.1 : The Sample of School, Teachers and Students**

| **Developmental status** | **Management** | **Number** | | |
|---|---|---|---|---|
| | | **Schools** | **Teachers** | **Students** |
| | | | | **5th to 7th** |
| **I<br>Developed** | **Government** | 7 | 123 | 253 |
| | **Private** | 8 | 148 | 366 |
| **II<br>Developing** | **Government** | 5 | 33 | 156 |
| | **Private** | 4 | 66 | 188 |
| **III<br>Undeveloped** | **Government** | 1 | 4 | 20 |
| | **Private** | 5 | 52 | 176 |
| **Total** | | **30** | **426** | **1154** |

## Data Collection and Processing

### Pilot Study

Pilot study was conducted mainly to find out the suitability of all tests and validity and reliability of newly developed tools, in a restricted sense.

The sample for pilot study was drawn from two schools, one in a rural area, another in Pune city, with students from low socio-economic status. The sample included 25 teachers and 46 students.

The tools given to teachers included tests of Mental Abilities, Motivation, Commitment and Values. There were in all six tests of Mental Abilities as mentioned earlier. Considering time constraints and sampling of tests, two tests, namely, Divergent Figural Units (DFU) and Divergent Behavioral Implications (DBI) were ommitted.

The questionnaires for studying the motivation, commitment and values were administered for verifying the suitability of content, time limits, and checking validity. As these questionnaires were newly constructed, their content validity was assessed through inter-judges' rating. Test-retest reliability was also calculated. As stated earlier, the test of commitment based on Brubaker's concept was found little difficult; hence a new questionnaire was developed on the basis of Bloom's Taxonomy.

The students were given the Scholastic Achievement Test (SAT) and Students' Learning Orientation Profile (SLOP). Item analysis was done for the test of scholastic achievement. The most difficult items (solved correctly by <= 5% of students) and the most easy items (solved correctly by >= 95% of students) were replaced by other items. The Students' Learning Orientation Profile is a standardized test, with split half reliability for 7 scales – 0.586 to 0.804. Its suitability was confirmed in pilot study.

The school climate questionnaire is a widely used tool, so reliability and validity were not calculated. The relevance of items for the kind of schools in this study was checked.

### Main Study

The data for schools, teachers and students was collected simultaneously by the trained test administrators, project fellows and additional field assistants. Annual examination marks, both subjectwise and total, of all students included in the sample were got from the office records. The Principal of the school and atleast one of the teachers were asked to fill the school climate questionnaire.

Data on certain close-end tests could be processed through computer right from the beginning, while that on open-end tests required manual scoring and/or qualitative interpretations. The following table presents the processing steps –

| Tool | Response Type | Checking of Responses and Scoring | Data entry on Computer |
|---|---|---|---|
| **SAT** | Multiple choice | Manual | Subtest raw scores |
| **SLOP** | Multiple choice | Manual | Subtest raw scores |
| **Mental Abilities** | | | |
| **1) NFC, CBR** | Multiple choice | Manual | Total score |
| **2) CMI, DMR** | Openend | Manual | Total score |
| **Motivation Intrinsic/Extrinsic** | Multiple choice | Computerised | Item responses |
| **Self/Students** | Multiple choice | Computerised | Item responses |
| **Commitment** | Ranking | Computerised | Item responses |
| **School climate** | Both multiple choice and open ended | Manual | Coded information (both quantitative and qualitative) |

# Section IV

## Survey Results and Discussion

The purpose of analysis of survey data was to identify the needs of teachers' training and to select the sample for intervention / training programme. Emphasis was more on exploration hence simpler statistical methods revealing subtle factors were used. Data analysis was planned accordingly as per the following steps.

- To study the performance of teachers and students on various tools used in survey
- Comparing their performance on different dimensions as –
  1) School management – Private or Government
  2) School climate – Enriched or Non-enriched
  3) Level of development of the area in which the school is located – Developed or Undeveloped

     Though different areas from which the sample of schools was selected were categorized as Developed, Being developed and Undeveloped, only Developed and Undeveloped area schools were taken for comparison.
- Comparing profiles of teachers of upper and lower quartile schools and students

The results for schools, teachers and students are presented along each tool and dimension of comparison.

### Schools

### School Climate

The Principal and the school teachers together evaluated the school climate using School Climate Questionnaire. The schools above Median score were considered as Enriched Environment School and those below Median were categorized as Non-Enriched Environment Schools. The following table no. 4.1 shows classification of schools on this dimension.

**Table No. 4.1 : Classification of Schools on School Climate**

| | Enriched | Non-Enriched |
|---|---|---|
| **Private** | 8 | 9 |
| **Government** | 5 | 8 |
| **Developed** | 8 | 7 |
| **Being Developed *** | 3 | 3 |
| **Undeveloped** | 2 | 7 |

* This category schools were omitted in further analysis.

The management of the school implying its organizational structure, and the socio-cultural development of the area in which the school is located are two explicit variables that have some influence on the environment in the school. The less explicit variable is the nature of activities in the school through which learning takes place. These activities result in the degree of 'enrichment of school climate'. Hence the teachers' and students' performance on various tools was analyzed on these three dimensions to reveal the required inputs in teachers' training programme.

## Teachers

Performance of teachers on tests of Mental Abilities, Motivation, Commitment and Values is shown and compared for Government vs. Private schools, Developed vs. Undeveloped area and Enriched vs. Non-enriched environment.

**Mental Abilities** – The scores on all tests of Mental Abilities are raw scores and not converted into standard scores or PRs. Tables 4.2 to 4.4 show the statistics of these scores.

Table No. 4.2 : Descriptive and Inferential Statistics of Mental Ability Test Scores of Teachers from Private (N = 266) and Government (N = 154) Schools

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | |
| Private | 1 – 14 | 6.00 | 5.61 | 2.66 | 0.09 | 0.33 | N.S. |
| Government | 1 – 14 | 5.00 | 5.52 | 2.94 | | | |
| **DMR** | | | | | | | |
| Private | 1 – 19 | 6.00 | 6.35 | 3.34 | -0.08 | -0.25 | N.S. |
| Government | 1 – 17 | 6.00 | 6.43 | 3.08 | | | |
| **NFC** | | | | | | | |
| Private | 1 – 12 | 8.00 | 8.02 | 2.38 | 0.55 | 2.08 | 0.05 |
| Government | 1 – 12 | 8.00 | 7.47 | 2.75 | | | |
| **CBR** | | | | | | | |
| Private | 1 – 20 | 11.00 | 10.90 | 3.15 | 0.08 | 0.25 | N.S. |
| Government | 1 – 20 | 11.00 | 10.82 | 3.33 | | | |

Table No. 4.3 : Descriptive and Inferential Statistics of Mental Ability Test Scores of Teachers from Schools in Developed Area (N=271) and Schools in Undeveloped Area (N=56)

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | |
| Developed area | 1 – 14 | 6.00 | 5.81 | 2.83 | 1.02 | 3.01 | 0.01 |
| Undeveloped area | 1 – 9 | 5.00 | 4.80 | 2.16 | | | |
| **DMR** | | | | | | | |
| Developed area | 1 – 19 | 6.00 | 6.75 | 3.28 | 1.61 | 3.49 | 0.01 |
| Undeveloped area | 1 – 14 | 4.00 | 5.14 | 3.09 | | | |
| **NFC** | | | | | | | |
| Developed area | 1 – 12 | 8.00 | 7.91 | 2.54 | 0.38 | 0.97 | N.S. |
| Undeveloped area | 1 – 12 | 8.00 | 7.53 | 2.67 | | | |
| **CBR** | | | | | | | |
| Developed area | 1 – 20 | 11.00 | 11.04 | 3.20 | 0.48 | 0.93 | N.S. |
| Undeveloped area | 4 – 17 | 11.00 | 10.57 | 3.51 | | | |

Table No. 4.4 : Descriptive and Inferential Statistics of Mental Ability Test Scores of Teachers from Enriched (N = 134) and Non-enriched (N = 78) Schools

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | |
| Enriched | 1-14 | 6.00 | 5.87 | 2.84 | 1.39 | 3.79 | 0.01 |
| Non – enriched | 1-11 | 4.00 | 4.48 | 2.39 | | | |
| **DMR** | | | | | | | |
| Enriched | 1-19 | 7.00 | 7.04 | 3.47 | 1.45 | 3.26 | 0.01 |
| Non – enriched | 1-14 | 5.00 | 5.59 | 2.86 | | | |
| **NFC** | | | | | | | |
| Enriched | 2-12 | 8.00 | 8.15 | 2.29 | 0.74 | 2.06 | 0.05 |
| Non – enriched | 1-12 | 8.00 | 7.41 | 2.61 | | | |
| **CBR** | | | | | | | |
| Enriched | 1-19 | 11.00 | 11.31 | 3.04 | 0.52 | 1.10 | N.S. |
| Non – enriched | 1-19 | 11.00 | 10.80 | 3.41 | | | |

It is clearly seen that regarding Mental Abilities as measured in four tests used here there is no difference in two groups, Private and Government, except for one test NFC (Convergent Thinking of Figural Classes) measuring non-verbal reasoning involved in Higher Logical Mathematical ability. For understanding behavior (CBR), and verbal understanding and creative thinking (CMI and DMR) the difference is negligible. When Developed and Undeveloped areas are compared the ability difference is more and shifted to verbal creative thinking. It is still enlarged when Enriched and Non-enriched schools are compared, Enriched always superior to Non-enriched though the difference is not significant in understanding human behaviour (CBR).

At some places the superiority of the favoured group is reflected in upper limit of the range of scores though the difference between Means is not significant.

**Motivation** - There were two subtests for motivation – I) measuring Intrinsic and Extrinsic Motivation and II) measuring Achievement, Affiliation and Power Motivation as related to self and students. The results are presented in Tables 4.5 to 4.10.

**Table No. 4.5 : Descriptive and Inferential Statistics of Motivation I - Questionnaire Scores of Teachers from Private (N = 266) and Government (N = 154) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Intrinsic** | | | | | | | |
| Private | 3 – 14 | 9.00 | 9.40 | 2.08 | 0.02 | 0.11 | N.S. |
| Government | 3 – 13 | 9.00 | 9.38 | 1.96 | | | |
| **Extrinsic** | | | | | | | |
| Private | 0 – 11 | 4.00 | 4.54 | 2.09 | 0.05 | 0.22 | N.S. |
| Government | 1 – 10 | 4.00 | 4.50 | 1.90 | | | |

**Table No. 4.6 : Descriptive and Inferential Statistics of Motivation I – Questionnaire Scores of Teachers from Schools in Developed Area (N = 271) and Schools in Undeveloped Area (N = 56)**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Intrinsic** | | | | | | | |
| Developed area | 4 – 14 | 9.00 | 9.36 | 1.90 | -0.20 | -0.59 | N.S. |
| Undeveloped area | 4 – 14 | 10.00 | 9.55 | 2.30 | | | |
| **Extrinsic** | | | | | | | |
| Developed area | 0 – 10 | 4.00 | 4.55 | 1.89 | 0.16 | 0.48 | N.S. |
| Undeveloped area | 0 – 10 | 4.00 | 4.39 | 2.33 | | | |

**Table No. 4.7 : Descriptive and Inferential Statistics of Motivation I - Questionnaire Scores of Teachers from Enriched (N = 134) and Non-enriched (N = 78) School**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Intrinsic** | | | | | | | |
| Enriched | 3-14 | 10.00 | 9.46 | 2.09 | -0.08 | -0.26 | N.S. |
| Non – enriched | 3-14 | 10.00 | 9.55 | 2.23 | | | |
| **Extrinsic** | | | | | | | |
| Enriched | 0-11 | 4.00 | 4.49 | 2.09 | 0.12 | 0.38 | N.S. |
| Non – enriched | 0-10 | 4.00 | 4.38 | 2.16 | | | |

**Table No. 4.8 : Descriptive and Inferential Statistics of Motivation II – Questionnaire (Self vs Student) Scores of Teachers from Private (N = 266) and Government (N = 154) Schools**

| | Range | | Median | | Mean | | SD | | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | Self | Student | Self | Student | Self | Student | Self | Student | | | |
| Private | 0-10 | 0-11 | 4.00 | 6.00 | 4.33 | 5.89 | 1.75 | 1.98 | -1.56 | -9.64 | 0.001 |
| Government | 0-10 | 0-12 | 4.00 | 6.00 | 4.68 | 5.92 | 1.85 | 2.08 | -1.23 | -5.48 | 0.001 |
| **Affiliation** | | | | | | | | | | | |
| Private | 0-10 | 0-8 | 3.00 | 3.00 | 3.49 | 3.03 | 1.81 | 1.75 | 0.46 | 2.98 | 0.01 |
| Government | 0-9 | 0-8 | 3.00 | 3.00 | 3.36 | 3.04 | 1.77 | 1.68 | 0.32 | 1.64 | N.S. |
| **Achievement** | | | | | | | | | | | |
| Private | 0-11 | 0-9 | 4.00 | 3.00 | 3.71 | 3.36 | 1.87 | 1.88 | 0.35 | 2.18 | 0.05 |
| Government | 0-9 | 0-11 | 4.00 | 3.00 | 3.98 | 3.32 | 1.83 | 2.14 | 0.65 | 2.88 | 0.01 |
| **Power** | | | | | | | | | | | |
| Private | 0-8 | 0-11 | 2.00 | 1.00 | 2.44 | 1.69 | 1.72 | 1.48 | 0.74 | 5.33 | 0.001 |
| Government | 0-6 | 0-9 | 2.00 | 1.00 | 1.94 | 1.56 | 1.49 | 1.26 | 0.37 | 2.38 | 0.05 |

**Table No. 4.9 : Descriptive and Inferential Statistics of Motivation II – Questionnaire (Self vs Student) Scores of Teachers from Schools in Developed Area (N = 271) and Schools in Undeveloped Area (N = 56)**

| | Range | | Median | | Mean | | SD | | DBM | T | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | Self | Student | Self | Student | Self | Student | Self | Student | | | |
| Developed area | 0-10 | 0-12 | 4.00 | 6.00 | 4.51 | 5.83 | 1.83 | 2.00 | -1.32 | -8.06 | 0.001 |
| Undeveloped area | 1-8 | 2-10 | 4.00 | 6.00 | 4.39 | 6.07 | 1.63 | 1.85 | -1.67 | -5.05 | 0.001 |
| **Affiliation** | | | | | | | | | | | |
| Developed area | 0-10 | 0-8 | 3.00 | 3.00 | 3.48 | 2.96 | 1.83 | 1.65 | 0.51 | 3.44 | 0.01 |
| Undeveloped area | 0-8 | 0-7 | 3.00 | 3.00 | 3.29 | 3.18 | 1.84 | 1.78 | 0.10 | 0.21 | N.S. |
| **Achievement** | | | | | | | | | | | |
| Developed area | 0-9 | 0-11 | 4.00 | 3.00 | 3.82 | 3.42 | 1.82 | 2.01 | 0.39 | 2.36 | 0.05 |
| Undeveloped area | 0-9 | 0-9 | 4.00 | 3.00 | 3.84 | 3.21 | 2.16 | 1.91 | 0.62 | 1.19 | N.S. |
| **Power** | | | | | | | | | | | |
| Developed area | 0-6 | 0-11 | 2.00 | 2.00 | 2.17 | 1.69 | 1.60 | 1.40 | 0.48 | 3.76 | 0.01 |
| Undeveloped area | 0-6 | 0-5 | 2.00 | 1.00 | 2.46 | 1.52 | 1.57 | 1.19 | 0.94 | 3.21 | 0.01 |

**Table No. 4.10 : Descriptive and Inferential Statistics of Motivation II – Questionnaire (Self vs Student) Scores of Teachers from Enriched (N = 134) and Non-enriched (N = 78) Schools**

| | Range | | Median | | Mean | | SD | | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | Self | Student | Self | Student | Self | Student | Self | Student | | | |
| Enriched | 0-9 | 0-11 | 4.00 | 6.00 | 4.35 | 5.69 | 1.80 | 2.02 | -1.34 | -5.72 | 0.001 |
| Non – enriched | 0-8 | 2-12 | 4.00 | 6.00 | 4.42 | 6.40 | 1.60 | 2.02 | -1.97 | -6.72 | 0.001 |
| **Affiliation** | | | | | | | | | | | |
| Enriched | 0-10 | 0-7 | 3.00 | 3.00 | 3.58 | 2.92 | 1.88 | 1.69 | 0.66 | 3.02 | 0.01 |
| Non – enriched | 0-7 | 0-8 | 3.00 | 3.00 | 3.32 | 3.04 | 1.78 | 1.81 | 0.28 | 0.97 | N.S. |
| **Achievement** | | | | | | | | | | | |
| Enriched | 0-11 | 0-9 | 4.00 | 4.00 | 3.82 | 3.72 | 1.99 | 2.01 | 0.10 | 0.42 | N.S. |
| Non – enriched | 0-9 | 0-8 | 3.00 | 3.00 | 3.83 | 2.97 | 1.88 | 1.69 | 0.85 | 2.98 | 0.01 |
| **Power** | | | | | | | | | | | |
| Enriched | 0-6 | 0-7 | 2.00 | 2.00 | 2.22 | 1.66 | 1.60 | 1.28 | 0.56 | 3.20 | 0.01 |
| Non – enriched | 0-8 | 0-9 | 2.00 | 1.00 | 2.41 | 1.58 | 1.83 | 1.42 | 0.83 | 3.15 | 0.01 |

Intrinsic and Extrinsic Motivation

It is clearly seen that Intrinsic Motivation is always higher than extrinsic and this picture is same in all comparisons - Private vs. Government, Developed vs. Undeveloped and Enriched vs. Non-enriched. The level also is mostly similar so the differences between Means across the type of the schools are nowhere significant. The slight differences in distribution as reflected in range and SDs are mostly negligible and not very consistent.

Motivation for self and students

When motivation is viewed as the basic need driving towards some goal, as Achievement, Power and Affiliation the emphasis for self is more than that for students in almost all schools. This difference is significant on all three Motivations in Private schools, and schools from Developed area. The difference is not significant on Achievement in Enriched schools and on Affiliation in Non-enriched and on both in Undeveloped area schools. On Neutrality the difference is in reverse direction and always significant. Neutrality is more for students than for self.

**Commitment** - The test of commitment yields three scores for three factors - Receiving, Responding and Valuing. Following tables 4.11 to 4.13 present the results.

**Table No. 4.11 : Descriptive and Inferential Statistics of Commitment Questionnaire Scores of Teachers from Private (N = 266) and Government (N = 154) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Receiving** | | | | | | | |
| Private | 15 – 48 | 38.00 | 37.29 | 4.22 | 0.01 | -0.01 | N.S. |
| Government | 27 – 51 | 37.50 | 37.30 | 4.18 | | | |
| **Responding** | | | | | | | |
| Private | 11 – 45 | 33.00 | 33.08 | 4.42 | -0.12 | -0.27 | N.S. |
| Government | 23 – 45 | 33.00 | 33.20 | 4.43 | | | |
| **Valuing** | | | | | | | |
| Private | 13-45 | 35.00 | 35.06 | 4.12 | 0.39 | 0.92 | N.S. |
| Government | 22-46 | 35.00 | 34.68 | 4.13 | | | |

**Table No. 4.12 : Descriptive and Inferential Statistics of Commitment Questionnaire Scores of Teachers from Schools in Developed Area (N = 271) and Schools in Undeveloped Area (N = 56)**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Receiving** | | | | | | | |
| Developed area | 24 – 51 | 38.00 | 37.46 | 3.96 | -0.15 | -0.26 | N.S. |
| Undeveloped area | 27 – 44 | 38.00 | 37.61 | 3.74 | | | |
| **Responding** | | | | | | | |
| Developed area | 20 – 45 | 33.00 | 33.39 | 4.36 | 0.92 | 1.46 | N.S. |
| Undeveloped area | 24 – 43 | 32.00 | 32.46 | 4.24 | | | |
| **Valuing** | | | | | | | |
| Developed area | 22 – 45 | 35.00 | 34.90 | 4.02 | -0.19 | -0.33 | N.S. |
| Undeveloped area | 27 – 44 | 35.50 | 35.09 | 3.82 | | | |

**Table No. 4.13 : Descriptive and Inferential Statistics of Commitment Questionnaire Scores of Teachers from Enriched (N = 134) and Non-enriched (N = 78) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Receiving** | | | | | | | |
| Enriched | 27-48 | 38 | 37.98 | 3.42 | 1.52 | 2.34 | 0.05 |
| Non – enriched | 15-44 | 37.00 | 36.46 | 5.05 | | | |
| **Responding** | | | | | | | |
| Enriched | 20-44 | 33.00 | 32.97 | 3.92 | 0.66 | 1.02 | N.S. |
| Non – enriched | 11-45 | 32.00 | 32.31 | 4.75 | | | |
| **Valuing** | | | | | | | |
| Enriched | 26-45 | 35.00 | 35.23 | 3.73 | 0.38 | 0.59 | N.S. |
| Non – enriched | 13-46 | 35.00 | 34.84 | 4.86 | | | |

The overall picture is same in all three comparisons except the difference on Receiving in Enriched vs. Non-enriched comparison. Here Enriched school teachers are significantly better on Receiving, than their counter part. But otherwise all teachers are mostly similar.

**Values** - The five values most preferred and five values least preferred by teachers were separately analyzed. The objective of the checklist was to know teachers' emphasis, so the percentage of responses per value was noted. The following tables show most preferred and least preferred values across the type of schools.

**Table No. 4.14 : Percent Frequencies of Teachers indicating Qualities Most Valued / Preferred by Teachers**

| **Qualities** | **Type of School** | | | | | |
|---|---|---|---|---|---|---|
| | **Private (N = 253)** | **Government (N = 157)** | **Developed (N = 269)** | **Undeveloped (N = 56)** | **Enriched (N = 129)** | **Non-Enriched (N = 71)** |
| Discipline | **66.40** | **65.61** | **65.06** | **60.71** | **68.22** | **80.28** |
| Confidence | **56.92** | **55.41** | **57.99** | **44.64** | **62.02** | **60.56** |
| Cooperation | **54.15** | **51.59** | **57.25** | **51.79** | **49.61** | **56.34** |
| Desire for Learning | **52.57** | **49.04** | **51.30** | **55.36** | **51.94** | **53.52** |
| Perseverance | **43.48** | **48.41** | **42.38** | **44.64** | **41.09** | **61.97** |
| Agreeableness | **35.97** | **35.67** | **37.55** | **39.29** | **35.66** | **36.62** |
| Enthusiasm | 33.60 | **35.03** | 33.46 | 30.36 | 31.78 | **38.03** |
| Sensitivity | 27.67 | 19.11 | 22.30 | 32.14 | 21.71 | **38.03** |
| Optimism | 19.76 | 27.39 | 25.28 | 25.00 | 19.38 | 18.31 |
| Novelty | 17.00 | 14.01 | 15.61 | 17.86 | 13.95 | 16.90 |
| Ability to change – self and environment | 10.67 | 8.28 | 9.67 | 12.50 | 10.08 | 12.68 |
| Competitiveness | 11.07 | 7.01 | 7.06 | 14.29 | 8.53 | 15.49 |
| Excellence | 6.32 | 12.74 | 12.27 | 1.79 | 8.53 | 2.82 |
| Motivating | 6.32 | 11.46 | 8.18 | 5.36 | 2.33 | 12.68 |
| Flexibility | 5.93 | 11.46 | 8.18 | 5.36 | 2.33 | 12.68 |
| Leadership | 7.91 | 8.28 | 8.18 | 14.29 | 8.53 | 9.86 |
| Goal Orientation | 6.32 | 8.92 | 7.06 | 5.36 | 4.65 | 11.27 |
| Planning | 6.72 | 5.10 | 5.95 | 10.71 | 5.43 | 7.04 |
| Problem Centeredness | 5.14 | 5.10 | 5.58 | 3.57 | 4.65 | 4.23 |
| Integration | 5.53 | 1.27 | 2.60 | 12.50 | 3.10 | 7.04 |

**Table No. 4.15 : Percent Frequencies of Teachers indicating Qualities Least Valued / Preferred by Teachers**

| **Qualities** | **Type of School** | | | | | |
|---|---|---|---|---|---|---|
| | **Private (N = 253)** | **Government (N = 157)** | **Developed (N = 269)** | **Undeveloped (N = 56)** | **Enriched (N = 129)** | **Non-Enriched (N = 71)** |
| Discipline | 3.95 | 3.18 | 3.72 | 3.57 | 4.65 | 0.00 |
| Confidence | 2.37 | 6.37 | 2.23 | 5.36 | 0.78 | 11.27 |
| Cooperation | 3.95 | 3.18 | 1.49 | 7.14 | 3.10 | 7.04 |
| Desire for Learning | 8.30 | 7.01 | 5.95 | 12.50 | 3.88 | 15.49 |
| Perseverance | 8.30 | 3.18 | 4.83 | 12.50 | 4.65 | 12.68 |
| Agreeableness | 8.30 | 8.92 | 7.06 | 12.50 | 7.75 | 9.86 |
| Enthusiasm | 5.93 | 7.01 | 5.95 | 5.36 | 6.98 | 7.04 |
| Sensitivity | 16.21 | 19.75 | 19.70 | 14.29 | 17.05 | 14.08 |
| Optimism | 25.69 | 19.11 | 20.82 | 19.64 | 23.26 | **36.62** |
| Novelty | 18.97 | 13.38 | 17.47 | 16.07 | 16.28 | 19.72 |
| Ability to change – self and environment | 24.51 | 17.83 | 24.16 | 16.07 | 29.46 | 16.90 |
| Competitiveness | **47.04** | **50.32** | **53.16** | **41.07** | **55.04** | **35.21** |
| Excellence | 22.53 | 20.38 | 19.33 | 25.00 | 16.28 | 29.58 |
| Motivating | 26.88 | 22.93 | 22.30 | 33.93 | 28.68 | 26.76 |
| Flexibility | **46.64** | 32.48 | **40.52** | **44.64** | **43.41** | **46.48** |
| Leadership | **45.85** | **51.59** | **52.04** | 26.79 | **47.29** | **40.85** |
| Goal Orientation | **39.53** | **40.76** | **39.78** | 26.79 | **44.96** | **43.66** |
| Planning | 29.25 | **38.85** | 31.23 | 17.86 | 24.03 | **45.07** |
| Problem Centeredness | **37.15** | **57.96** | **47.21** | 30.36 | **35.66** | **46.48** |
| Integration | **35.97** | **36.31** | **36.43** | 26.79 | 34.88 | **38.03** |

For the clarity in comparative picture, the values have been rearranged in a descending order of percentage of 'most preferred' by private school, and this order is maintained for all types of schools and also for 'least preferred'.

The qualities valued and preferred most are the same every where but their weightages differ. These are Discipline, Confidence, Desire to Learn, Cooperativeness and Perseverance.

The least preferred in all schools are Flexibility, Goal Orientation, Problem Orientation, and Leadership. The difference in weightages is also observed here. However for the least preferred, teachers are not as unanimous as for the 'most preferred.' In comparative analysis we find that among 5 least preferred, one or two values are unique with certain type of schools.

Teachers in the Private schools ignore Flexibility while those in Government schools ignore Planning. Teachers in Developed area schools less emphasize Integration while those in Undeveloped area overlook significance of 'Motivation'. In Enriched schools less importance is for Competition while in Non-Enriched schools 'Planning' is less important.

These observations are quite explanatory though not very conclusive. They certainly indicate the qualities deserving more attention in training.

On the whole, teachers are mostly similar; whether they work in Government schools or Private Aided schools, in Developed area or in Undeveloped area, is less important. But some differences are revealed along the dimension of school climate. Teachers in Enriched school are intellectually more capable, are ready to learn, and receive more, and are Achievement oriented for self and also for students.

## Students

Students' performance on two tests Scholastic Achievement Test (SAT) and Students Leaning Orientation Profile (SLOP) was studied in the same way as for teachers. The results are presented in the tables 4.16 to 4.21.

**Scholastic Achievement Tests (SAT)** - SAT gives a score for Language – Marathi, for Mathematics, for General Intelligence and a total of these three scores. Tables 4.16 to 4.18 show the statistics of these scores.

**Table No. 4.16 : Descriptive and Inferential Statistics of Scholastic Achievement Test (SAT) Scores of Students from Private (N = 695) and Government (N = 384) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Marathi** | | | | | | | |
| Private | 2 – 20 | 11.00 | 10.88 | 3.15 | 0.63 | 3.60 | 0.01 |
| Government | 3 – 18 | 10.00 | 10.24 | 2.53 | | | |
| **Maths** | | | | | | | |
| Private | 1 - 14 | 5.00 | 5.25 | 2.95 | 1.28 | 8.42 | 0.01 |
| Government | 1 – 10 | 4.00 | 3.97 | 2.00 | | | |
| **General Intelligence** | | | | | | | |
| Private | 1 – 15 | 8.00 | 7.99 | 3.44 | 0.54 | 2.77 | 0.01 |
| Government | 1 – 14 | 7.00 | 7.45 | 2.84 | | | |
| **Total Scholastic Scores** | | | | | | | |
| Private | 4 – 48 | 23.00 | 23.88 | 8.21 | 2.41 | 5.72 | 0.01 |
| Government | 6 – 42 | 21.00 | 21.47 | 5.54 | | | |

**Table No. 4.17 : Descriptive and Inferential Statistics of Scholastic Achievement Test (SAT) Scores of Students from the Schools in Developed Area (N = 618) and Schools in Undeveloped Area (N = 186)**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Marathi** | | | | | | | |
| Developed area | 2 – 20 | 11.00 | 11.19 | 3.01 | 1.62 | 7.14 | 0.01 |
| Undeveloped area | 2 – 16 | 10.00 | 9.56 | 2.61 | | | |
| **Maths** | | | | | | | |
| Developed area | 1 – 14 | 5.00 | 5.38 | 2.85 | 1.61 | 8.47 | 0.01 |
| Undeveloped area | 1 – 14 | 4.00 | 3.77 | 2.05 | | | |
| **General Intelligence** | | | | | | | |
| Developed area | 1 – 15 | 8.00 | 8.29 | 3.26 | 1.46 | 5.32 | 0.01 |
| Undeveloped area | 1 – 15 | 6.00 | 6.83 | 3.29 | | | |
| **Total Scholastic Scores** | | | | | | | |
| Developed area | 6-48 | 23.50 | 24.65 | 7.76 | 4.86 | 8.77 | 0.01 |
| Undeveloped area | 4-44 | 19.00 | 19.79 | 6.23 | | | |

**Table No. 4.18 : Descriptive and Inferential Statistics of Scholastic Achievement Test Scores of Students from Enriched (N = 282) and Non-enriched (N = 274) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Marathi** | | | | | | | |
| Enriched | 3 – 19 | 12.00 | 11.74 | 3.12 | 2.01 | 9.41 | 0.001 |
| Non – enriched | 3 – 16 | 10.00 | 9.73 | 2.64 | | | |
| **Maths** | | | | | | | |
| Enriched | 1 – 14 | 5.00 | 5.90 | 3.21 | 2.29 | 11.13 | 0.001 |
| Non – enriched | 1 – 10 | 3.00 | 3.61 | 1.89 | | | |
| **General Intelligence** | | | | | | | |
| Enriched | 2 – 15 | 9.00 | 8.76 | 3.41 | 2.18 | 9.17 | 0.001 |
| Non – enriched | 1 – 14 | 6.00 | 6.57 | 2.96 | | | |
| **Total Scholastic Scores** | | | | | | | |
| Enriched | 10 – 48 | 25.00 | 26.32 | 8.41 | 6.60 | 10.43 | 0.001 |
| Non – enriched | 6 – 36 | 19.00 | 19.73 | 5.68 | | | |

SAT Mean Scores are found to be significantly higher for schools that are Private, that come from Developed area and that are Enriched, when compared with their counter parts - Government, Undeveloped and Non-enriched schools. The mean performance shows slight increase from Private to Developed and from Developed to Enriched school. It has also decided the upper limit of distribution which favours Private, Developed and Enriched schools. The difference between Means also goes on increasing in the same way resulting in Means decreasing from Government to Undeveloped and from Undeveloped to Non-enriched.

Thus it is the environment within school that induces more difference. The picture depicted by comparison of Means is still more supported when the toppers are compared.

**Students' Learning Orientation Profile (SLOP)** - This test shows seven different orientations in students' learning such as Personality Dominance (PEDOL), Assessment Dominance (ADOL), Involvement Dominance (INJOL), Apathy (APAL), Intrinsic (INVOL) and Extrinsic Orientations (EXOL) and Significant Other (SIGOL) variables. The results are given in the tables 4.19 to 4.21.

**Table No. 4.19 : Descriptive and Inferential Statistics of Student Learning Orientation Profile (SLOP) Test from Private (N = 645) and Government (N = 354) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **PEDOL** | | | | | | | |
| Private | 11 – 32 | 28.00 | 26.99 | 4.13 | 0.79 | 2.91 | 0.01 |
| Government | 10 - 32 | 27.00 | 26.19 | 4.11 | | | |
| **ADOL** | | | | | | | |
| Private | 9 – 30 | 22.00 | 21.41 | 3.51 | 0.07 | 0.32 | N.S. |
| Government | 10 – 31 | 21.00 | 21.34 | 3.44 | | | |
| **INJOL** | | | | | | | |
| Private | 8 – 32 | 27.00 | 26.50 | 4.10 | 1.16 | 4.37 | 0.01 |
| Government | 11 – 32 | 26.00 | 25.34 | 3.96 | | | |
| **APAL** | | | | | | | |
| Private | 6 – 32 | 16.00 | 17.14 | 5.10 | -0.96 | -3.07 | 0.01 |
| Government | 8 – 30 | 18.00 | 18.10 | 4.52 | | | |
| **INVOL** | | | | | | | |
| Private | 10 – 32 | 27.00 | 26.28 | 4.14 | 1.04 | 3.72 | 0.01 |
| Government | 8 – 32 | 26.00 | 25.24 | 4.28 | | | |
| **EXOL** | | | | | | | |
| Private | 10 – 32 | 27.00 | 26.29 | 4.42 | 0.29 | 1.01 | N.S. |
| Government | 13 – 32 | 26.50 | 26.00 | 4.22 | | | |
| **SIGOL** | | | | | | | |
| Private | 10 – 32 | 24.00 | 23.98 | 4.13 | 0.04 | 0.14 | N.S. |
| Government | 10 – 32 | 24.00 | 23.95 | 3.78 | | | |

**Table No. 4.20 : Descriptive and Inferential Statistics of Student Learning Orientation Profile (SLOP) Test from Schools in Developed Area (N = 606) and Schools in Undeveloped Area (N = 155)**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **PEDOL** | | | | | | | |
| Developed area | 10-32 | 28.00 | 27.17 | 3.97 | 0.83 | 2.06 | 0.05 |
| Undeveloped area | 11-32 | 28.00 | 26.34 | 4.58 | | | |
| **ADOL** | | | | | | | |
| Developed area | 9-31 | 21.00 | 21.12 | 3.46 | -0.97 | -2.93 | 0.01 |
| Undeveloped area | 11-29 | 22.00 | 22.08 | 3.71 | | | |
| **INJOL** | | | | | | | |
| Developed area | 11-32 | 27.00 | 26.48 | 3.69 | 0.60 | 1.48 | N.S. |
| Undeveloped area | 13-32 | 27.00 | 25.88 | 4.62 | | | |
| **APAL** | | | | | | | |
| Developed area | 8-30 | 16.00 | 16.72 | 4.59 | -2.25 | -4.96 | 0.01 |
| Undeveloped area | 9-32 | 19.00 | 18.97 | 5.14 | | | |
| **INVOL** | | | | | | | |
| Developed area | 8-32 | 27.00 | 26.13 | 4.17 | 0.35 | 0.84 | N.S. |
| Undeveloped area | 10-32 | 27.00 | 25.78 | 4.74 | | | |
| **EXOL** | | | | | | | |
| Developed area | 13 - 32 | 27.00 | 26.64 | 4.02 | 0.54 | 1.26 | N.S. |
| Undeveloped area | 11 – 32 | 28.00 | 26.10 | 4.91 | | | |
| **SIGOL** | | | | | | | |
| Developed area | 10 – 32 | 24.00 | 24.12 | 3.85 | -0.21 | -0.57 | N.S. |
| Undeveloped area | 13 – 32 | 25.00 | 24.34 | 4.15 | | | |

**Table No. 4.21 : Descriptive and Inferential Statistics of Student Learning Orientation Profile (SLOP) Test from Enriched (N = 268) and Non-enriched (N = 221) Schools**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **PEDOL** | | | | | | | |
| Enriched | 14 – 32 | 28.00 | 27.64 | 3.39 | 2.72 | 9.11 | 0.00 |
| Non – enriched | 11 – 32 | 25.00 | 24.92 | 4.49 | | | |
| **ADOL** | | | | | | | |
| Enriched | 12 – 30 | 22.00 | 21.61 | 3.45 | 0.08 | 0.31 | N.S. |
| Non – enriched | 11 – 31 | 21.00 | 21.53 | 3.61 | | | |
| **INJOL** | | | | | | | |
| Enriched | 15 – 32 | 27.50 | 27.14 | 3.42 | 2.69 | 8.72 | 0.00 |
| Non – enriched | 12 – 32 | 25.00 | 24.45 | 4.67 | | | |
| **APAL** | | | | | | | |
| Enriched | 8 – 31 | 15.00 | 16.47 | 4.74 | -2.18 | -5.45 | 0.00 |
| Non – enriched | 8 – 32 | 19.00 | 18.65 | 4.92 | | | |
| **INVOL** | | | | | | | |
| Enriched | 17 – 32 | 27.00 | 27.14 | 3.32 | 2.62 | 8.83 | 0.00 |
| Non – enriched | 10 – 32 | 25.00 | 24.52 | 4.55 | | | |
| **EXOL** | | | | | | | |
| Enriched | 15 – 32 | 28.00 | 26.90 | 3.81 | 2.09 | 6.06 | 0.00 |
| Non – enriched | 10 – 32 | 26.00 | 24.81 | 4.98 | | | |
| **SIGOL** | | | | | | | |
| Enriched | 10 – 32 | 25.00 | 24.42 | 4.04 | 1.40 | 4.28 | 0.00 |
| Non – enriched | 11 – 32 | 23.00 | 23.03 | 4.18 | | | |

Through comparisons of Private vs. Government, Developed vs. Undeveloped, and Enriched vs. Non-enriched it is clearly seen that in Private, Developed area and Enriched schools Personality Orientation is more and Apathy is less, as compared to their counterparts. Though the difference does not show gradual increase in this direction, it is most when Enriched and Non-enriched schools are compared.

Both Private and Developed schools are not different from their counterparts for Extrinsic Orientation (EXOL) and Significant Others (SIGOL) but Developed is better in Assessment Dominance (ADOL) while Private is better in Involvement (INJOL).

A very significant and meaningful picture is created by Enriched and Non-enriched school comparison, the difference is significant in 6 out of 7 variables in favour of Enriched and at the same time it is less and not significant on Assessment Domination.

This clearly brings forth the fact that for improving students' Scholastic Ability and their Orientation in Learning, enrichment of school environment can play a major role. Whether the school is Private or Government, whether it is in Developed or Undeveloped area is relatively less important.

This suggests further that teachers should be oriented towards making impact on school climate. They should create the learning environment which is multifaceted and encourages students' interactive participation. It is the environment in which teachers also are active and are seen as learners.

### Teachers of Students with High and Low SAT Scores

To reveal the training needs in relation to students' scholastic performance, all schools (N = 30) were ranked according to the average SAT scores of students in each school. Instead of upper and lower quartile, a cut of point was decided at upper and lower 15%, for better discrimination between two groups of teachers. This procedure yielded higher group of 64 teachers from the top 3 schools and a lower group of 60 teachers from the bottom 5 schools. These two groups are compared on all variables – Mental Abilities, Motivation, Commitment and Values. Table No. 4.22 to 4.25 shows the results. For more meaningful picture the population norms i.e. the Means of the whole survey population are mentioned along with the higher and lower group.

**Table No. 4.22 : Descriptive and Inferential Statistics of Mental Ability Test Scores of Teachers from higher (N = 64) and lower (N = 60) Group**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | |
| Higher Group | 0 – 14 | 6.00 | 5.77 | 2.65 | 1.70 | 3.69 | 0.01 |
| Lower Group | 0 – 10 | 4.00 | 4.07 | 2.43 | | | |
| **DMR** | | | | | | | |
| Higher Group | 0 – 19 | 6.50 | 7.06 | 3.97 | 1.63 | 2.46 | 0.05 |
| Lower Group | 0 – 14 | 5.00 | 5.53 | 3.32 | | | |
| **NFC** | | | | | | | |
| Higher Group | 2 – 12 | 9.00 | 8.38 | 2.21 | 0.99 | 2.20 | 0.05 |
| Lower Group | 1 – 12 | 8.00 | 7.38 | 2.71 | | | |
| **CBR** | | | | | | | |
| Higher Group | 1 – 19 | 11.00 | 10.91 | 3.15 | 0.44 | 0.69 | N.S. |
| Lower Group | 2 – 20 | 10.00 | 10.47 | 3.85 | | | |

**Table No. 4.23 : Descriptive and Inferential Statistics of Motivation I - Questionnaire Scores of Teachers from higher (N = 64) and lower (N = 60) Group**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Intrinsic** | | | | | | | |
| Higher Group | 6 – 13 | 9.00 | 9.22 | 1.63 | -0.25 | -0.63 | N.S. |
| Lower Group | 3 – 14 | 9.00 | 9.47 | 2.55 | | | |
| **Extrinsic** | | | | | | | |
| Higher Group | 1 – 8 | 5.00 | 4.67 | 1.65 | 0.19 | 0.49 | N.S. |
| Lower Group | 0 – 10 | 5.00 | 4.48 | 2.49 | | | |

**Table No. 4.24 : Descriptive and Inferential Statistics of Motivation II - Questionnaire (Self vs Student) Scores of Teachers from higher (N = 64) and lower (N = 60) Group**

| | Range | | Median | | Mean | | SD | | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Neutral** | Self | Student | Self | Student | Self | Student | Self | Student | | | |
| Higher Group | 1 – 8 | 3 – 9 | 4.00 | 6.00 | 4.34 | 6.11 | 1.68 | 1.67 | -1.76 | -5.90 | 0.01 |
| Lower Group | 2 – 10 | 2 – 12 | 4.00 | 7.00 | 4.40 | 6.52 | 1.82 | 2.09 | -2.11 | -5.87 | 0.01 |
| **Affiliation** | | | | | | | | | | | |
| Higher Group | 1 – 10 | 1 – 7 | 3.00 | 3.00 | 3.63 | 2.91 | 1.87 | 1.47 | 0.71 | 2.39 | 0.05 |
| Lower Group | 0 – 8 | 0 – 7 | 3.00 | 3.00 | 3.25 | 2.93 | 1.81 | 1.91 | 0.35 | 0.92 | N.S. |
| **Achievement** | | | | | | | | | | | |
| Higher Group | 0 – 7 | 0 – 7 | 4.00 | 3.00 | 3.67 | 3.38 | 1.72 | 1.85 | 0.29 | 0.93 | N.S. |
| Lower Group | 0 – 9 | 0 – 7 | 3.00 | 3.00 | 3.70 | 2.90 | 1.92 | 1.85 | 0.80 | 2.30 | 0.05 |
| **Power** | | | | | | | | | | | |
| Higher Group | 0 – 6 | 0 – 4 | 2.00 | 2.00 | 2.36 | 1.61 | 1.66 | 1.11 | 0.75 | 2.98 | 0.01 |
| Lower Group | 0 – 6 | 0 – 9 | 2.00 | 1.00 | 2.63 | 1.63 | 1.73 | 1.70 | 1.00 | 3.17 | 0.01 |

**Table No. 4.25 : Descriptive and Inferential Statistics of Commitment Questionnaire Scores of Teachers from higher (N = 64) and lower (N = 60) Group**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **Receiving** | | | | | | | |
| Higher Group | 30 – 45 | 38.00 | 37.70 | 3.39 | 0.82 | 1.13 | N.S. |
| Lower Group | 23 – 46 | 38.00 | 36.88 | 4.53 | | | |
| **Responding** | | | | | | | |
| Higher Group | 20 – 43 | 34.00 | 33.36 | 4.20 | 0.26 | 0.31 | N.S. |
| Lower Group | 23 – 45 | 33.00 | 33.10 | 5.06 | | | |
| **Valuing** | | | | | | | |
| Higher Group | 27 – 45 | 34.00 | 34.66 | 3.96 | -0.16 | 0.24 | N.S. |
| Lower Group | 27 – 42 | 35.00 | 34.82 | 3.49 | | | |

**Table No. 4.26 : Percent Frequencies of Teachers indicating Qualities Most Valued / Preferred by Teachers**

| **Qualities** | **Most Valued** | | **Least Valued** | |
|---|---|---|---|---|
| | **Higher Group (N = 64)** | **Lower Group (N = 60)** | **Higher Group (N = 64)** | **Lower Group (N = 60)** |
| Discipline | **77.89** | **58.46** | 2.11 | 3.08 |
| Confidence | **57.89** | **46.15** | 1.05 | 12.31 |
| Cooperation | **58.95** | **56.92** | 2.11 | 4.62 |
| Desire for Learning | **54.74** | **53.85** | 5.26 | 15.38 |
| Perseverance | **42.11** | **50.77** | 6.32 | 9.23 |
| Agreeableness | 30.53 | 33.85 | 5.26 | 15.38 |
| Enthusiasm | 30.53 | **36.92** | 7.37 | 6.15 |
| Sensitivity | 26.32 | **40.00** | 17.89 | 13.85 |
| Optimism | 17.89 | 16.92 | 28.42 | **35.38** |
| Novelty | 9.47 | 16.32 | 24.21 | 16.92 |
| Ability to change – self and environment | 12.63 | 7.69 | 30.53 | 10.77 |
| Competitiveness | 8.42 | 9.23 | **53.68** | **41.54** |
| Excellence | 10.53 | 7.69 | 16.84 | 32.31 |
| Motivating | 6.32 | 9.23 | 25.26 | 23.08 |
| Flexibility | 6.32 | 6.15 | **44.21** | **41.54** |
| Leadership | 6.32 | 9.23 | **57.89** | 27.69 |
| Goal Orientation | 6.32 | 9.23 | **38.95** | 24.62 |
| Planning | 8.42 | 7.69 | 32.63 | 27.69 |
| Problem Centeredness | 5.26 | 4.62 | **47.37** | 33.85 |
| Integration | 3.16 | 9.23 | **44.21** | 27.69 |

The results show that on Mental Abilities the difference is largest and also significant on 3 out of 4 tests. On other variables though the differences are very small and not significant at many places they are slightly in favour of higher group, on Extrinsic Motivation, and Commitment for Receiving.

The qualities most preferred are not very different in two groups but the weightages are different. The difference is more note-worthy in valuing Discipline and Confidence with more weightage by the Higher group and in valuing Perseverance and Sensitivity with greater weightages by the Lower group. The weightages for least preferred also show difference with over all trend similar to earlier analysis.

## Summary and Conclusion

The analysis of survey data regarding schools, teachers and students points out very clearly that Enriched School Environment is congenial for the development of Abilities of both teachers and students. Teachers from Enriched school environment are decisively better than their counterparts, on Mental Abilities, are ready to Receive more and are Achievement oriented both for self and students.

In many other respects teachers any where are mostly the same. The differences are very small and not significant. This picture is not changed when teachers of Higher SAT score students and Lower SAT score students are compared.

The analysis of students' data on the lines similar to teachers' data analysis support the importance of Enriched school climate. Students from Enriched schools are not only superior in SAT scores but also show desirable Learning Orientations.

In other comparisons as Private vs. Government Schools and Developed vs. Undeveloped area, the differences are in favour of students in the former category in most of the cases, though the difference is small and not significant at many places.

These results conclude for the direction of teachers' training for their effectiveness to enrich the school climate. The School Climate Questionnaire evaluates the climate on 7 different dimensions such as –

1) Teachers perception about physical and psychosocial climate of the school.
2) Curriculum based knowledge through off-classroom activities.
3) Knowledge outside curriculum
4) Psychomotor Skill
5) Socio-economic and cultural awareness
6) Religious and philosophical awareness
7) Expressional skills and emotional control

The results also warrant little more balance in teachers' Intrinsic and Extrinsic Motivation, less Neutrality towards students and higher Achievement and Affiliation Motivation for students. From the qualities desirable for teachers only a few are concentrated by most of them. Qualities as Goal Orientation, Problem Centeredness, Planning, Flexibility remain ignored. Such qualities should be valued by some teachers. The implicit learning by students takes place through their observation of teachers' behaviour. The activities beyond class-room give more scope for development and expression of such qualities and also two levels of Commitment, namely, Receiving and Responding.

The review of previous research and related literature points out the need for considering both cognitive and affective components and integrating them to strengthen teachers' behavior. There should be focus on developing more desirable personality traits in relation to the environment. Teachers should be equipped with more empathy towards students and play way and activity based approach. The school should be a place to learn the social-cultural system of the world outside and the way of integrating subject knowledge into an organized whole that can be experienced. Without self-learning it is not possible for any teacher to stand to those expectations to change the 'world' through the 'school'.

# Section V
# The Training

## Sample

Experimental Group - The analysis of Survey yielded cut-of points for selection of schools, referring to School Climate, Students' Scholastic Ability and Teachers' Mental Abilities. The schools were divided into four quartiles and those in the lower quartiles (below Median) were appealed to send the teachers for training programme. Personal acquaintances and letter by the Education Officer had to be used. Three government schools from 3 towns in the industrial area 20 kms from Pune and two private schools 40-50 kms towards east and west of Pune showed the interest in training. The initial sample of the teachers from these schools is shown below.

**Table No. 5.1 : Sample of Teachers Selected for Training**

| | Government Schools | Private Schools | Total |
|---|---|---|---|
| **Male** | 9 | 23 | 32 |
| **Female** | 21 | 3 | 24 |
| **Total** | 30 | 26 | 56 |

Because the academic calendars of government and private schools were not similar, initially the training programmes for government and private schools were launched separately, and also conducted separately at separate venues for most of the times. The two groups were combined only occasionally. For certain part of the programme even each of the five schools was dealt independently. There was a reshuffling of the group after a few sessions of training due to transfers of teachers. The new teachers were again had to be briefed about earlier sessions.

## Training Programme

The whole programme was spaced over the complete academic year – from June to April. In the first term the focus was more on training and in the second term it was more on implementation by teachers, follow-up, and feedback.

Method - The methods used in training ranged widely, and included – lecture, interactive lecturette, group discussion, group task, experiential learning, self report, observation, self-study, individual and group project and planned but informal sharing and interactions.

Material – Ready-made notes for teachers were avoided as far as possible. However for new topics such as Multiple Intelligence, SOI Model, Creativity, etc. brief printed notes were given for individual reference, to each participant. Most of the exercises and instruments in the form of the questionnaire, used in the training programme were retained by the teachers as their own copies. A set of reference books useful for talent development was given to each school for the participant teachers in that school.

Content – The contents of the programme along with objectives and specific activities are mentioned here in brief. The objectives of the programme were the same for all schools though some specific activities and projects were planned as per the individual needs of the teachers, the needs of the students and facilities that would be available at the school. More details of the programme as it was conducted are given in the Appendix III.

**Table No. 5.2 : Contents of the Training Programme**

| Objectives and Sheaths involved * | Activities and Contents | Method |
|---|---|---|
| Physical Fitness<br>*Annamaya*<br>*Pranamaya* | Simple warming up exercises.<br>Yogasanas - Focus on Parvatasan, Padmasan, Pachhimottanasan, Uttanpadasan, Shavasan, Bhujangasan<br>Pranayam – Unulom-Vilom, Omkar Pranayam | Lecture<br>Demonstration<br>Physical exercise<br>Experiential activity |

* : The specific Sheath or the Kosha more involved is mentioned here. However if may be borne in mind that no activity can be exclusively classified under a single Sheath.

| | | |
|---|---|---|
| Health Awareness<br>*Annamaya* | For oneself<br>Ayurvedic approach to Health care. Health for women<br>Relaxation for sound sleep<br>Health for Students<br>Adolescent development<br>Diet for students from low income group | Lecture<br>Exercise<br>Experiential activity |
| Desire to change oneself and others<br>*Manomaya*<br>*Vijnanamaya* | SWOT<br>Knowing oneself and environment, SWOT analysis<br>Planning for change<br>Group discussion in relation to SWOT of oneself and the group<br>Being a Teacher<br>Why I am a teacher? Did I get education I wanted? What is the role of the teacher? Am I fit for it? How to adapt with the environment for the development of self and others<br>Job in me<br>The exercise relating one's own qualities, success and progress in the job, to the job requirement. | Lecture<br>Written exercise<br>Group discussion<br>Debrief |
| Achievement Motivation<br>*Manomaya*<br>*Vijnanamaya* | Management Game for Achievement Motiation:<br>Performing a difficult task involving risk<br>Knowing more about successful personalities<br>Sharing real life experiences of facing challenges | Lecture<br>Physical exercise<br>Group discussion<br>Listening to stories<br>Sharing |
| Self-learning desire and urge<br>*Manomaya*<br>*Vijnanamaya* | Interacting with other teachers doing novel experiments<br>Undertaking individual projects<br>Understanding principles of self development | Visits<br>Projects<br>Group discussion<br>Follow-up |

| | | |
|---|---|---|
| Interacting with the environment<br>*Manomaya*<br>*Vijnanamaya* | Knowing the environment<br>School for the gifted<br>School in the rural area – a center for social development<br>Off-school programme for identifying and nurturing talents in rural children<br>Functioning of Sugar School<br>Science projects<br>Responding to the environment<br>Group projects with the help of the students<br>Planning and implementing projects<br>Meeting people, asking information, expressing oneself, organizing the action, leadership<br>School climate<br>Understanding variables of school climate<br>Planning activities for changing climate | Lecture<br>Visits<br>Observation<br>Questioning<br>Brief reports<br>Group discussion<br>Group study<br>Group task<br>Follow-up |
| Effective communication expressing and making impact<br>*Pranamaya* | Exercise for improving quality of speech<br>Internal factors : content and its oragnisation<br>External factors : accents, tone, voice modulation, clarity of speech, body language<br>Exercise for discussion skills<br>Leading group discussion<br>Effective presentation of a report | Exercise<br>Practice<br>Evaluation and Feedback |
| Reading skills<br>*Vijnanamaya* | Reading speed and comprehension<br>Knowing one's own reading speed with comprehension<br>Knowing factors involved in reading<br>How to improve reading skills of students<br>Knowing and removing hindrances in reading | Lecture<br>Exercise<br>Group discussion<br>Feedback |
| Writing skills<br>*Pranamaya* | Speed of writing<br>Legible handwriting<br>Making effective writing for announcement and letters | Exercise<br>Feedback |

|  |  |  |
|---|---|---|
| Listening skill<br>*Pranamaya*<br>*Manomaya* | Realizing blocks in listening<br>Listening and completing the story in a group one-by-one<br>Listening to a message, remembering and interpreting to find a solution | Exercise<br>Debrief |
| Improving cognitive ability<br>*Vijnanamaya* | Understanding nature of Multiple Intelligence<br>Guilford's SOI model<br>Simple illustration in day-to-day behavior for various factors in SOI<br>Preparing exercise on SOI model for students<br>Individual project work in one's own subject area for the deeper insight<br>Discussion on debatable issue<br>Memory - Memory an Ayurvedic concept and how to improve memory | Lecture<br>Self-study<br>Group discussion<br>Group task<br>Project<br>Feedback |
| Creative thinking<br>*Vijnanamaya* | Observation skills, visualization, inquiry technique, brain storming, SCAMPER, morphological analysis<br>How to apply technique of creative thinking in the classroom<br>Preparing exercise on creative thinking in the classroom learning | Lecturette<br>Exercise<br>Group task |
| Understanding and managing emotions<br>*Manomaya*<br>*Vijnanamaya* | Removing mental blocks and inhibition<br>Understanding nature of emotions<br>Understanding emotions of students<br>Emotional development<br>Types of emotions<br>Emotional catharsis<br>Positive thinking while solving problems | Experiential learning<br>Lecture |

| | | |
|---|---|---|
| Stress management<br>*Manomaya* | Knowing one's own stress<br>What is stress? Why stress?<br>Coping strategies<br>Learning relaxation techniques | Interactive<br>lecturatte<br>Exercise<br>Experiential<br>learning |
| Project : as a tool for learning<br>*Pranamaya*<br>*Vijnanamaya* | Experiments in teaching<br>Project method (why? When? For whom?)<br>Types of projects<br>Action research<br>How to undertake action research | Lecture |
| Use of effective methods for learning<br>*Manomaya* | Story telling<br>Street play<br>Group song<br>Drama<br>Role play<br>Povada / Lyric | Demonstration&<br>exercise |
| Motivation for students<br>*Manomaya*<br>*Vijnanamaya* | Facilitation<br>Understanding and using facilitation technique<br>Competitions<br>Arranging competitions stimulating different factors in cognitive and affective domain<br>Rewards and feed back : Appropriate use of reward and feedback for motivation<br>Group project work<br>Learning through group project work | Exercise<br>Group discussion<br>Implementation<br>Feedback<br>Experiential and participative learning |
| Commitment for self-development<br>*Manomaya*<br>*Vijnanamaya* | Panchkosha concept for self-development and development of students<br>Self-development through social development<br>Maslow's need hierarchy and self-actualization<br>Qualities of good teacher<br>Preparing checklist for observation of students | Lectures<br>Demonstration<br>Interactive<br>lecturette<br>Group discussion<br>Group task |

| | | |
|---|---|---|
| Stress management<br>*Manomaya* | Knowing one's own stress<br>What is stress? Why stress?<br>Coping strategies<br>Learning relaxation techniques | Interactive lecturatte<br>Exercise<br>Experiential learning |
| Project : as a tool for learning<br>*Pranamaya*<br>*Vijnanamaya* | Experiments in teaching<br>Project method (why? When? For whom?)<br>Types of projects<br>Action research<br>How to undertake action research | Lecture |
| Use of effective methods for learning<br>*Manomaya* | Story telling<br>Street play<br>Group song<br>Drama<br>Role play<br>Povada / Lyric | Demonstration and exercise |
| Motivation for students<br>*Manomaya*<br>*Vijnanamaya* | Facilitation<br>Understanding and using facilitation technique<br>Competitions<br>Arranging competitions stimulating different factors in cognitive and affective domain<br>Rewards and feed back : Appropriate use of reward and feedback for motivation<br>Group project work<br>Learning through group project work | Exercise<br>Group discussion<br>Implementation<br>Feedback<br>Experiential and participative learning |
| Commitment for self-development<br>*Manomaya*<br>*Vijnanamaya* | Panchkosha concept for self-development and development of students<br>Self-development through social development<br>Maslow's need hierarchy and self-actualization<br>Qualities of good teacher<br>Preparing checklist for observation of students | Lectures<br>Demonstration<br>Interactive lecturette<br>Group discussion<br>Group task |

Control Group : Two schools, one government school and other private school, comparable to Experimental schools, were selected as control group schools. They were from the Survey sample and hence data on pre-tests was available. However at the last moment due to some unavoidable reasons post-testing could not be carried out in these schools at proper time, in a proper way. Even the office records as the number of drop-outs and students' performance in the annual examination were not completely available. So this group has to be almost excluded from the major analyses for this Part II of the study. It was too late to get any other comparable school for post-testing.

## About the participating schools

### School 1 – The Government School

The school 1 is secondary school having standards from 5th to 10th. The Principal of the school was more Discipline oriented. The school very often wins prizes in school competitions in sports and arts.

Ten teachers participated in the training. Some of them were eager to learn but many were not. Nearly half of the them were new to the school and there was no 'we feeling' or 'My School Pride'. Those who were enthusiastic and responsive were participating in all sessions whole heartedly. The new teachers could comprehend the themes and the methods in training but could not carry it to the students. This school worked on 'Medicinal Plants'. Teachers helped the students to collect information from books, to interview Ayurved experts and also to grow plants in the school campus.

### School 2 – The Government School

The school has primary and secondary sections. The Principal was active and enthusiastic. There were nine teachers from this school, who were present for almost all training sessions. They participated very well in discussions, activities and games and asked more information when they needed. They thought independently about various topics introduced during training and also tried to utilize their knowledge in the classroom. They did not allow their own personal difficulties to hamper their participation. On the whole they consistently behaved as a 'group' and 'a proactive group'.

They worked on the project of 'Rice Crop'. The project was to be implemented and completed with the help of students. It included interviewing farmers, collecting newspaper cuttings and consolidating the information in a report form. Teachers too participated in adding something from their own, to the project report. One of the teachers learnt and practiced the 'exercise for improving concentration', and tried to introduce it in the class-room. One of the students' projects has been selected at the national level for children's science congress.

### School 3 – The Government School

School 3 is a Government school having both primary and secondary sections Ten teachers (2 male and 8 female) participated in the training. Some of them were working in morning shift and some in afternoon shift. Hence they had less interactions with each other in the school. The Principal also had to look after both Morning and Afternoon shift and was rather overburdened and had less communication with teachers. Though majority of teachers participated whole heartedly some (2 to 3) were quite irregular and did not do their individual projects so willingly. This group never turned into 'one group'.

Those who were ready to learn, solved all personal problems in the school and at home, motivated their students and completed their project work about a religious place 'Alandi', a village near the school. For the project they did a survey of pollution of the river, the pilgrims visiting, the native people and the shops. Most of the information was collected through interviews.

### School 4 – The Private School

The school 4 is a private school in the village 40 Kms. from Pune. It is a secondary school having classes form 5th to 10th. Children from nearby Zilla Parishad primary school come to the 5th standard in this school. Majority of children come from farmers' families.

Most of the teachers (N = 12) from this school participated in the training. Sometime even the Principal also was present. The male-female ratio for this school was exactly opposite. There were more males (N = 10) than females (N = 2). Due to distance, transportation and other responsibilities, initially teachers were rather reluctant, but later on their interest increased noteworthily. Most of the teachers, except 2 or 3 were regular. They were alert to transfer their

knowledge and experience in training, to their students. Instead of working on all children from standards 5th to 7th, they decided to focus on standard 6th. They worked on the project 'Kamdhenu' for which they helped students to know about 'Dairy' and its functioning, milk-standardization, animals in the village, etc. For the same class of students, they arranged variety of simple competitions involving intellectual, creative and physical skills. Students certainly profited from it. They observed the change in students' behavior using 5 point rating scale.

### School 5 – The Private School

The school 5 is a private school in the village 40 Km. from Pune. It is a secondary school having standards from 5th to 10th. The school also has a hostel facility. Most of the children are from farmers' families. Some stay in the hostel, some are 'day-students'. Some teachers are residential and look after the hostel. They have to perform different roles – *counsellor, guardian / parents*, and take all care.

Eleven teachers participated in the programme. All teachers were participating whole heartedly and the Principal also was present a few times. Most of the teachers were quite open, more creative, and active. They were implementing what they learnt in the programme. They helped students to work on the project 'Pavana River' – the agriculture, and the culture around the river. Students also studied the income and expenditure in their families to have some economic picture of their living. Though these teachers were participative they were not regular and later on got more involved in other school activities and so were not present on certain tests.

# Section VI

## Effect of Training : Results and Discussion

The goal of the teachers' training was to make them more capable of changing the learner and the learning environment. So for verifying the impact of the training the evaluation of the change in the learner and learning environment is more important. However since this has to be taken place through teachers the effect on teachers also has to be studied.

Hence general hypotheses were stated as follows :

As a result of training

1) There will be improvement in the cognitive ability, motivation and commitment of teachers,

2) i) There will be improvement in the enrichment of school climate, and
   ii) in students' scholastic performance, motivation and attitude towards learning.

The results are evaluated in the light of these hypotheses and no specific hypothesis is set for any statistical test.

Since the school climate has only a single score and small data, it is presented first. It is then followed by results regarding teachers and students.

### Effect on School Climate

The results of survey clearly indicate the effect of enriched school climate on both students and teachers. In the training programme teachers were stimulated to conduct activities in the school, through which they can invite students' participation and interaction with the world beyond the school. This strategy changes the school climate on various dimensions. Of course it depends on teachers' enthusiasm, readiness to respond and take more responsibilities, cooperation by the principal and infrastructure facilities. Table No. 6.1 shows scores of experimental and control group schools on School Climate Questionnaire. Scores are presented separately for each school and are not averaged because what teachers could do in the school was not the same for all schools.

**Table No. 6.1 : Pre and Post Test Scores on School Climate Questionnaire of Experimental and Control Group**

| Experimental Group | Pre-Test | Post-Test |
|---|---|---|
| School 1 | 114 | 170 |
| School 2 | 107 | 162 |
| School 3 | 95 | 130 |
| School 4 | 95 | 122 |
| School 5 | - | 225 |

| Control Group | Pre-Test | Post-Test |
|---|---|---|
| School 1 | 104 | 116 |

| | | |
|---|---|---|
| Survey Population | M = 106 | SD = 24.25 |

The post-test scores speak a lot. The experimental group schools show noteworthy rise in the school climate. The improvement by experimental schools is highly significant (t = 5.956, p<.01, df = 3) (Dennis, H. and Duncan, C. 2000).

It also suggests some relationship with teachers' participation in the programme. Most of the Teachers from schools 1 and 2 were more cooperative, ready to learn and devote more time. The principals too were supportive. These teachers conducted new activities in the class-room and also beyond the class-room. Teachers from two schools 3 and 4 were less participative. Later on school no. 4 did cooperate and had some focused efforts for std. VI and it had satisfactory effect. Though the problems teachers had to face in schools 3 and 4 were different the result is the same – the change in school climate is less. School 5 was going through a special period of time. It was preparing for celebration of completion of 12 years – a 'Tapapurti Function' hence the whole school was being upsurged. The score reflects a large effect of that specific period over and above what might be expected through training. Such temporary and/or 'cosmetic' rise and the sporadic change, may or may not leave equally large effect on students. This school did not complete the questionnaire at the time of pre-test hence we could not have that data.

The control group schools were not available at the proper time for the post tests, so the experimental and control group comparison is not possible. The results available with one of the

The control group schools were not available at the proper time for the post tests, so the experimental and control group comparison is not possible. The results available with one of the control schools are presented. The pre and post-test scores of the control group are not much different.

The standing of experimental schools in comparison with population should be considered more important rather than just pre-test and post-test comparison. The figure 6.1 shows the experimental schools along with the norm – the average School Climate score obtained in the survey.

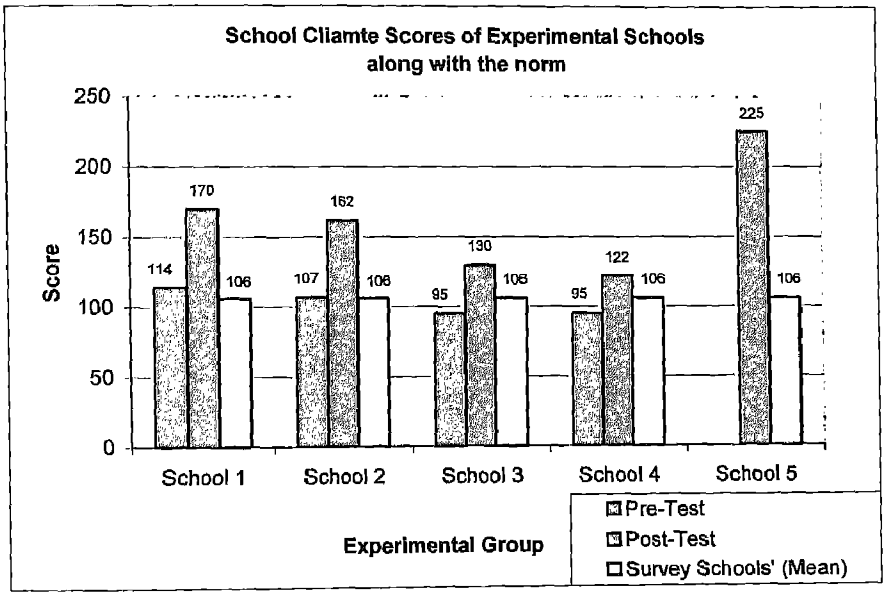


**Figure 6.1**

Both the tables 6.1 and figure 6.1 show decisively the impact of training on school climate.

The Mean and SD of School Climate Scores of 30 schools involved in the survey are given in Table No. 6.1 for reference. It may be noted that in terms of σ distance the post-test scores of experimental school 1 to4 are considerably above the norm. The minimum score (school 4) is more than 1.0 σ distance above the norm while the maximum score (school 1) is more than 2.0 σ distance above the norm.

For the reason stated earlier school 5 is not considered for statistical analysis. However results with 4 schools are sufficiently revealing and support the hypothesis (2i) that 'As a result of training there will be improvement in the enrichment of school climate'.

## Effect of Training on Teachers

The effect of training was partially studied through comparing pre-test and post-test performance of teachers under training. These results are presented through tables 6.2 to 6.11 for Mental Abilities, Motivation, Commitment and Values. As explained earlier all the teachers were not same in pre-test and post-test situation. Hence the *group Means have been compared considering the groups as two independent groups in the initial stage of the analysis*[1]. Again selecting only those who were present for pre-test and post-test, the difference is tested by chi-square.

### Enhancing Mental Abilities

Table 6.2 gives pre-test post-test scores of both Experimental and Control group on tests of Mental Abilities, followed by schoolwise results in experimental group.

**Table No. 6.2 : Pre-test Post-test Scores of Teachers in the Experimental and Control Group on Tests of Mental Abilities (N Experimental – Pre = 50, Post = 48) (N Control – Pre = 30, Post = 21)**

| Experimental Group | Range | Median | Mean | SD | DBM | t | Sig. | Survey Population Mean |
|---|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | | |
| Pre -Test | 1-11 | 5.00 | 5.36 | 2.45 | 3.31 | 5.62 | 0.001 | 5.58 |
| Post – Test | 4-16 | 8.00 | 8.67 | 3.28 | | | | |
| **DMR** | | | | | | | | |
| Pre -Test | 1-11 | 5.50 | 5.76 | 2.72 | 1.74 | 2.78 | 0.01 | 6.38 |
| Post – Test | 1-14 | 7.00 | 7.50 | 3.39 | | | | |
| **NFC** | | | | | | | | |
| Pre -Test | 1-12 | 6.00 | 6.46 | 2.72 | 1.28 | 3.17 | 0.01 | 7.82 |
| Post – Test | 3-12 | 8.00 | 8.04 | 2.22 | | | | |
| **CBR** | | | | | | | | |
| Pre -Test | 5-18 | 11.00 | 10.73 | 3.21 | 0.96 | 1.61 | N.S. | 10.87 |
| Post – Test | 6-17 | 12.00 | 11.69 | 2.72 | | | | |

Footnote[1] : See Appendix I for the explanation.

| Control Group | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **CMI** | | | | | | | |
| Pre -Test | 2-14 | 6.00 | 5.85 | 2.67 | 1.48 | 1.97 | .05 |
| Post – Test | 1-13 | 7.00 | 7.33 | 2.53 | | | |
| **DMR** | | | | | | | |
| Pre -Test | 2-14 | 6.00 | 6.53 | 2.98 | 0.52 | 0.62 | N.S. |
| Post – Test | 3-14 | 6.00 | 7.05 | 2.81 | | | |
| **NFC** | | | | | | | |
| Pre -Test | 2-12 | 8.00 | 8.17 | 2.46 | 0.02 | 0.03 | N.S. |
| Post – Test | 4-12 | 8.00 | 8.19 | 2.01 | | | |
| **CBR** | | | | | | | |
| Pre -Test | 6-16 | 11.00 | 10.92 | 2.98 | 0.12 | 0.14 | N.S. |
| Post – Test | 6-16 | 12.00 | 11.04 | 2.81 | | | |

The results in table no. 6.2 clearly show the significant gain by experimental group in semantic understanding, divergent thinking and reasoning (CMI, DMR, NFC). Teachers' groups before and after training show improvement in all test scores though not significant in CBR. In the control group only in CMI the difference is significant at 0.05 level.

**Table No. 6.3 : Comparison of Pre-test Post-test Scores of Teachers (N = 36) from Experimental Group by Chi-square Tests**

| Test | Df | $\chi^2$ | Significance |
|---|---|---|---|
| **CMI** | 2 | 22.14 | $p < 0.01$ S |
| **DMR** | 2 | 39.36 | $p < 0.01$ S |
| **NFC** | 2 | 4.53 | $p < 0.11$ NS |
| **CBR** | 2 | 9.13 | $p < 0.02$ S |

Selecting teachers present for both pre-test and post-test, when chi square test was applied, the difference is highly significant for CMI, DMR and CBR. For NFC though $\chi^2$ is not significant p is not very large. Thus all analyses support favourable effect of training on Mental Ability test scores of teachers.

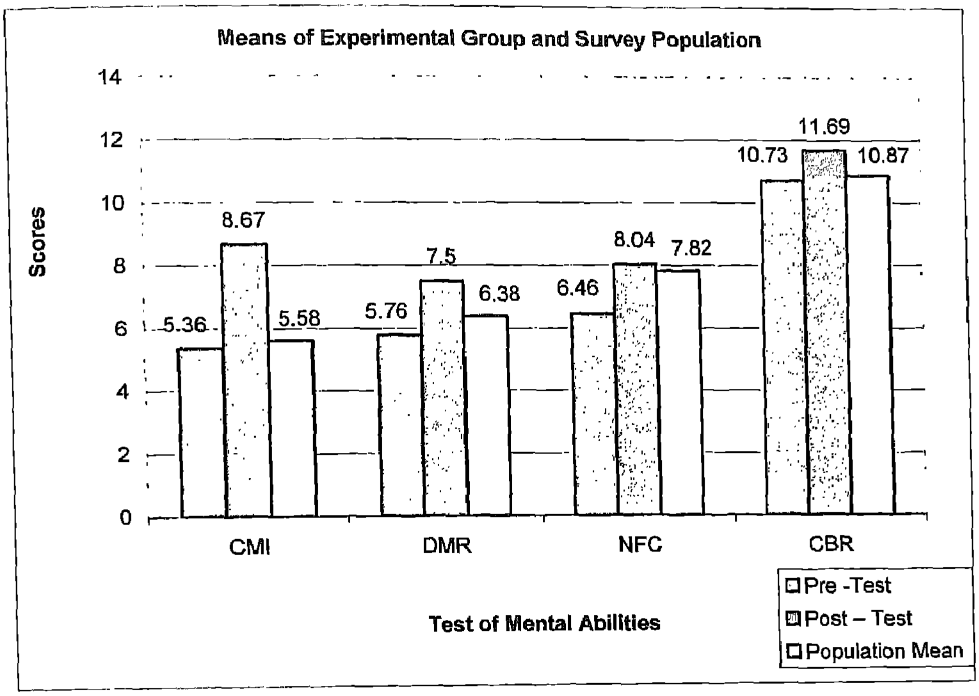


**Figure 6.2**

The effect of training was also judged by comparing the teachers' standing with population norms i.e. the means of population; we find here that in post-test they have surpassed the norms though not equally.

## Motivational Change

How far motivational change is possible through training? Can we change the general orientation from Intrinsic towards Extrinsic? If so, whether it can be measured fully by a questionnaire as used here? The pre-test and post-test scores on Motivation are given in Table No. 6.4 and 6.5.

**Table No. 6.4 : Pre-test Post-test Scores of Teachers in the Experimental Groups on tests of Intrinsic and Extrinsic Motivation**

| | Range | Median | Mean | SD | DBM | t | Sig. | Survey Population Mean |
|---|---|---|---|---|---|---|---|---|
| **Intrinsic** | | | | | | | | |
| Pre -Test | 6-13 | 9.00 | 9.25 | 1.69 | -0.04 | -0.104 | N.S. | 9.39 |
| Post – Test | 4-12 | 10.00 | 9.21 | 1.90 | | | | |
| **Extrinsic** | | | | | | | | |
| Pre -Test | 1-8 | 5.00 | 4.63 | 1.63 | 0.10 | 0.27 | N.S. | 4.53 |
| Post – Test | 2-10 | 4.00 | 4.73 | 1.78 | | | | |

**Table No. 6.5 : Comparison of Pre-test Post-test Scores of Teachers (N = 24) from Experimental Group by Chi-square test**

| Test | df | $\chi^2$ | Significance |
|---|---|---|---|
| **Intrinsic** | 3 | 2.77 | NS |
| **Extrinsic** | 3 | 1.00 | NS |

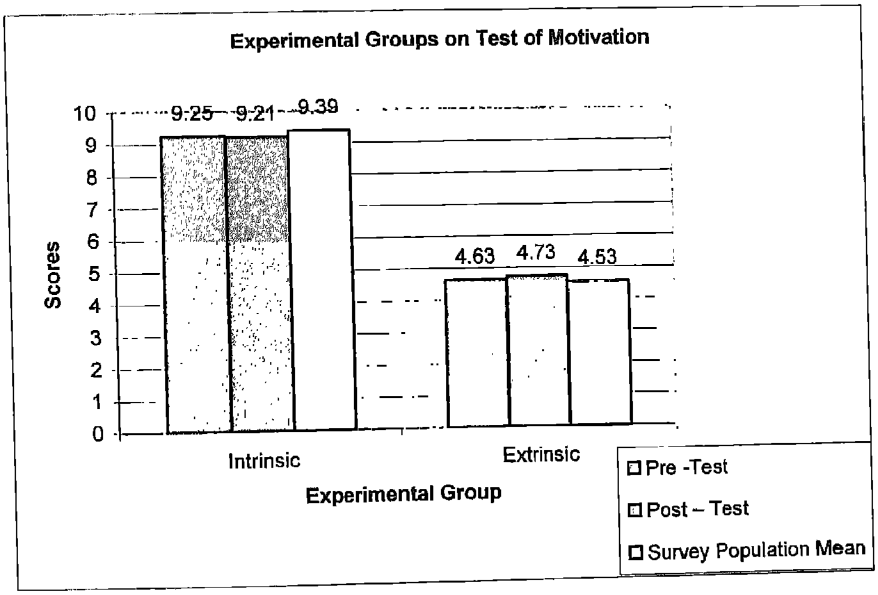


**Figure 6.3**

Intrinsic and extrinsic motivations are more related with basic dispositional traits. However individual can be made aware of the dominance of either, and the advantages and disadvantages of each. Teaching is expected to be a selfless service, and teachers to be more devoted to it. Social recognition, rewards, promotion, may be of secondary importance. It is also true that extrinsic motivation keeps the individual oriented towards performance and results. Though in the training teachers were made aware of it, it is not reflected in the post-test scores. The pre-test and post-test difference is not significant also in chi-square test and group is not different from the norm. Perhaps greater change in education system and culture is essential.

Motivation for Achievement, Affiliation and Power towards Self and towards students was studied in two directions; firstly the difference between pre and post-test scores, and difference between scores for self and students. The table no. 6.6 presents the results.

**Table No. 6.6 : Descriptive and Inferential Statistics of Teachers of Experimental Group at Pre-test and Post-test of Motivation (N – Self and Student – Pre = 50, Post = 48)**

| | Range | Median | Mean | SD | DBM | t | Sig. | Survey Population Mean |
|---|---|---|---|---|---|---|---|---|
| **Neutral (Self)** | | | | | | | | |
| Pre -Test | 2 – 9 | 5.00 | 4.72 | 1.75 | -0.64 | -1.74 | 0.05 | 4.46 |
| Post – Test | 1 – 8 | 4.00 | 4.08 | 1.84 | | | | |
| **Neutral (Student)** | | | | | | | | |
| Pre -Test | 2 – 10 | 6.00 | 5.80 | 1.89 | 0.03 | 0.08 | N.S. | 5.90 |
| Post – Test | 1 – 10 | 6.00 | 5.83 | 1.84 | | | | |
| **Affiliation (Self)** | | | | | | | | |
| Pre -Test | 0 – 6 | 3.00 | 3.26 | 1.50 | 0.20 | 0.59 | N.S. | 3.44 |
| Post – Test | 0 – 8 | 3.00 | 3.46 | 1.79 | | | | |
| **Affiliation (Student)** | | | | | | | | |
| Pre -Test | 1 – 7 | 3.00 | 3.26 | 1.68 | -0.47 | -1.36 | N.S. | 3.03 |
| Post – Test | 0 – 6 | 2.50 | 2.79 | 1.71 | | | | |
| **Achievement (Self)** | | | | | | | | |
| Pre -Test | 1 – 6 | 3.50 | 3.58 | 1.41 | 0.31 | 0.83 | N.S. | 3.81 |
| Post – Test | 0 – 9 | 3.00 | 3.89 | 2.14 | | | | |
| **Achievement (Student)** | | | | | | | | |
| Pre -Test | 1 – 6 | 3.00 | 3.20 | 1.47 | 0.34 | 1.05 | N.S. | 3.35 |
| Post – Test | 0 – 7 | 3.00 | 3.54 | 1.68 | | | | |
| **Power (Self)** | | | | | | | | |
| Pre -Test | 0 – 8 | 2.00 | 2.44 | 1.97 | -0.09 | -0.24 | N.S. | 2.26 |
| Post – Test | 0 – 8 | 2.00 | 2.35 | 1.70 | | | | |
| **Power (Student)** | | | | | | | | |
| Pre -Test | 0 – 7 | 2.00 | 1.74 | 1.42 | -0.08 | -0.30 | N.S. | 1.64 |
| Post – Test | 0 – 5 | 2.00 | 1.66 | 1.20 | | | | |

It is quite clear that the Means and Medians do not show any change. But there are slight changes in SDs and Ranges. Selecting only those who were present for pre-test and post-test, the chi-square test was applied. The results are presented in the table no. 6.7.

Table No. 6.7 : Comparison of Pre-test Post-test Scores of Teachers (N = 25) from Experimental Group by Chi-square test for self and for student

**Pre and Post test – Student**

| Test | df | $\chi^2$ | Significance |
|---|---|---|---|
| Neutral | 2 | 0.81 | N.S. |
| Affiliation | 3 | 0.97 | N.S. |
| Achievement | 2 | 9.03 | $p < 0.01$ |
| Power | 2 | 4.31 | N.S. |

**Pre and Post test Self**

| Test | df | $\chi^2$ | Significance |
|---|---|---|---|
| Neutral | 3 | 0.85 | N.S. |
| Affiliation | 2 | 1.38 | N.S. |
| Achievement | 3 | 19.27 | $p < 0.01$ |
| Power | 2 | 2.05 | N.S. |

Table No. 6.8 : Comparison of Pre-test Post-test Scores of Teachers (N = 25) from Experimental Group by Chi-square test for difference between self and student

**Pre-test (Self – Student)**

| Test | df | $\chi^2$ | Significance |
|---|---|---|---|
| Neutral | 3 | 18.28 | $p < 0.01$ |
| Affiliation | 3 | 8.47 | $p < 0.05$ |
| Achievement | 3 | 2.30 | N.S. |
| Power | 3 | 12.23 | $p < 0.01$ |

**Post-test (Self – Student)**

| Test | df | $\chi^2$ | Significance |
|---|---|---|---|
| Neutral | 3 | 15.32 | $p < 0.01$ |
| Affiliation | 3 | 0.83 | N.S. |
| Achievement | 3 | 10.99 | $p < 0.05$ |
| Power | 3 | 3.42 | N.S. |

The chi-squares too do not show any significant effect of training except for Achievement motivation. The Means of Achievement for all teachers have shown slight improvement in the score. The change in distribution of scores of the smaller group of teachers present for both pre-test and post-test is significant as indicated by chi-square test.

The experimental group is also compared with population and we find very negligible difference.

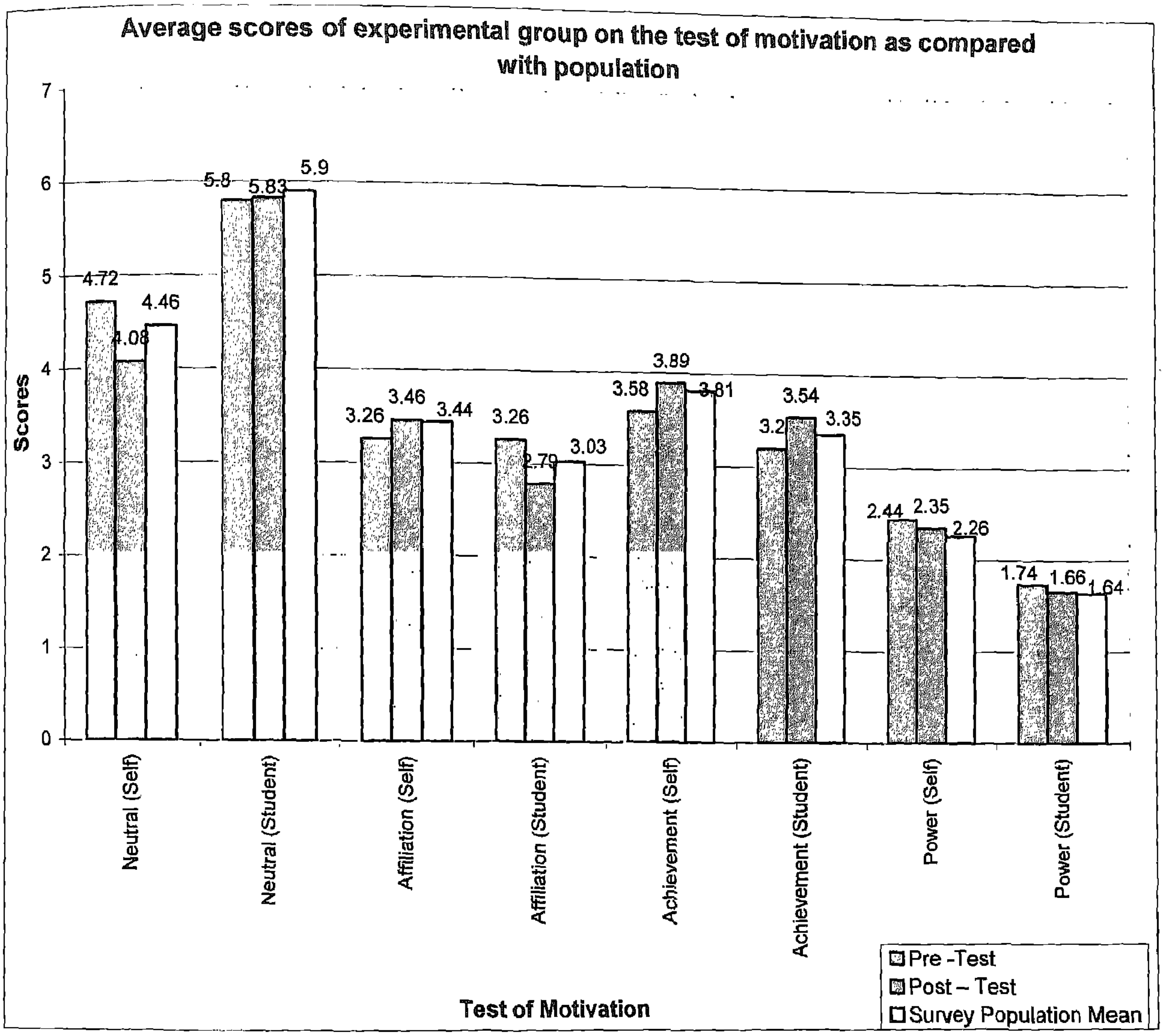


**Figure 6.4**

The bar diagram in the figure no. 6.4 shows that the experimental group is only slightly better than population at four places. All these results on both the tests of Motivation indicate very little impact of training. Perhaps more experience and change in the whole system is essential.

## Commitment

On the test of commitment we do not find much change. But the group as a whole has slightly shifted towards higher stage. Receiving, responding and valuing are the stages of commitment. The items in the test are so framed that a change in desirable direction implies some decrease on lower stage and gradual increase in higher stage. Thus favourble change in commitment is indicated by higher score on responding and highest on valuing. The results are presented in table no. 6.9

**Table No. 6.9 : Pre-test Post-test Scores of Teachers in the Experimental Groups on tests of commitment (N - Pre = 50, Post = 48)**

| Experimental Group | Range | Median | Mean | SD | DBM | t | Sig. | Survey Population Mean |
|---|---|---|---|---|---|---|---|---|
| **Receiving** | | | | | | | | |
| Pre –Test | 15-51 | 37.00 | 36.91 | 6.05 | -1.34 | -1.12 | N.S. | 37.29 |
| Post – Test | 13-45 | 36.00 | 35.57 | 5.44 | | | | |
| **Responding** | | | | | | | | |
| Pre –Test | 11-43 | 33.00 | 33.13 | 5.32 | 1.44 | 1.20 | N.S. | 33.12 |
| Post – Test | 14-47 | 35.00 | 34.57 | 6.20 | | | | |
| **Valuing** | | | | | | | | |
| Pre –Test | 13-44 | 34.00 | 33.23 | 5.29 | 1.09 | 1.05 | N.S. | 34.92 |
| Post – Test | 15-44 | 34.00 | 34.32 | 4.60 | | | | |

The results clearly show that there is no significant change in the Commitment as indicated by Mean scores. These observations are again verified by chi-square test after selecting only those teachers who were present for both pre-test and post-test.

**Table No. 6.10 : Comparison of Pre-test Post-test Scores of Teachers (N = 24) from Experimental Group by Chi-square test**

| Test | Df | $\chi^2$ | Significance |
|---|---|---|---|
| **Receiving** | 3 | 16.98 | $p<0.01$ S |
| **Responding** | 3 | 9.72 | $p<0.05$ S |
| **Valuing** | 3 | 1.09 | NS |

The changes in Receiving ($\chi^2 = 16.98$) and Responding ($\chi^2 = 9.72$) are highly significant, while that in Valuing is not significant. Perhaps for higher level of commitment as seen through Valuing, it may require greater impact of training and environment as well as internalizing experiences through Responding for a longer period.

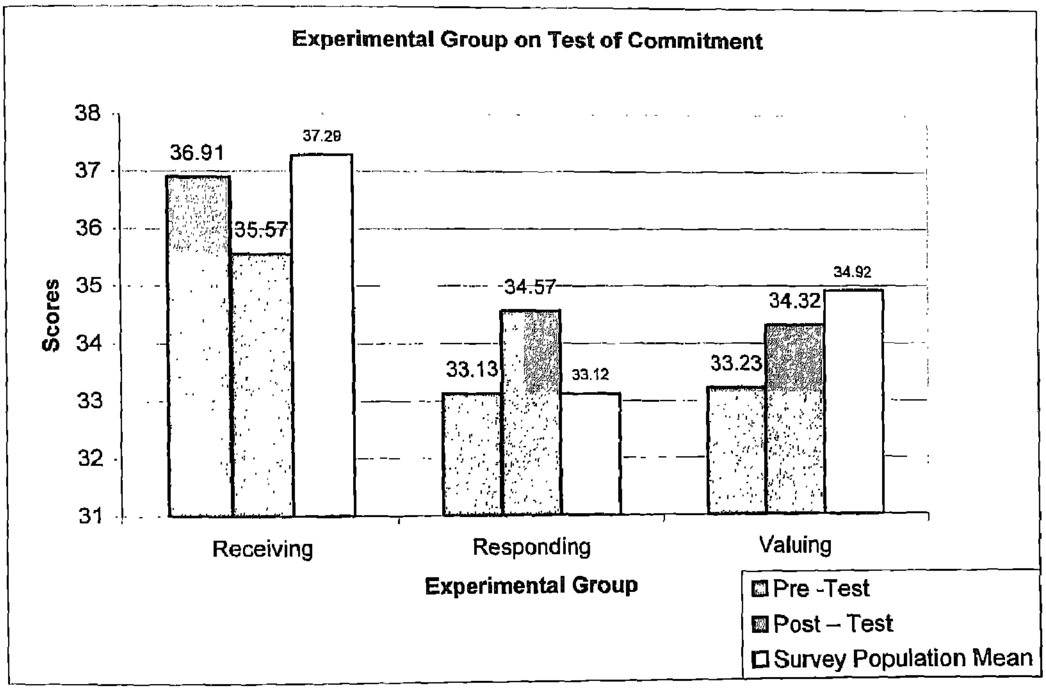


**Figure 6.5**

When compared with population Means we get the similar picture. The experimental group is little better than population average in Responding.

## Effect on Values / Preferences

The percent responses for 'Five most preferred / valued qualities', by experimental group were analysed school-wise. The qualities chosen by 35 percent or more have been shown bold in the table no. 6.11.

**Table No. 6.11 : The Qualities Most Preferred / Valued by Experimental Group Teachers in Post-Test in comparison with Population, given in Percent Frequencies**

| Qualities valued | Population (N = 410) | Experimental schools (Post-test) | | | | Combined (Post-test) (N = 41) | School 5 (Post-test) (N=8) |
|---|---|---|---|---|---|---|---|
| | | 1 (N=9) | 2 (N=8) | 3 (N=10) | 4 (N=14) | | |
| Discipline | 66.10 | 86 | 38 | 80 | 62 | 66.98 | 88 |
| Confidence | 56.34 | 57 | 38 | 40 | 46 | 45.39 | 38 |
| Cooperation | 53.17 | 86 | 50 | 50 | 54 | 59.27 | 63 |
| Desire for Learning | 51.22 | 86 | 25 | 70 | 54 | 59.27 | 38 |
| Perseverance | 45.87 | 43 | 50 | 80 | 69 | 62.27 | 38 |
| Agreeableness | 35.86 | 86 | 38 | 50 | 46 | 54.20 | 38 |
| Enthusiasm | 34.15 | 29 | 38 | 50 | 23 | 33.83 | 63 |
| Sensitivity | 24.39 | 43 | 13 | 10 | 46 | 30.12 | 38 |
| Optimism | 22.68 | 29 | 13 | 40 | 23 | 26.51 | 13 |
| Novelty | 15.86 | 29 | 25 | 10 | 23 | 21.54 | 50 |
| Ability to change – self and environment | 9.75 | 29 | - | - | - | 6.37 | 13 |
| Competitiveness | 9.52 | - | 25 | 10 | 31 | 17.90 | - |
| Excellence | 8.78 | - | 38 | - | 8 | 10.15 | 75 |
| Motivating | 8.29 | 14 | - | - | - | 3.07 | 25 |
| Flexibility | 8.05 | - | 38 | 10 | 8 | 12.59 | 38 |
| Leadership | 8.05 | 14 | 13 | - | 8 | 8.34 | 13 |
| Goal Orientation | 7.32 | - | - | - | - | - | - |
| Planning | 6.10 | - | - | - | - | - | 13 |
| Problem Centeredness | 5.12 | 14 | - | 20 | - | 7.95 | - |
| Integration | 3.90 | - | - | - | - | - | 13 |

As explained earlier all the qualities listed in the 'Values test' are those of effective teacher. In the training programme teachers were made aware of these, through discussion and experiential exercises. At the same time they were also conducting some activities for children for which some of their qualities become functional spontaneously. That has changed their preferences to some extent. When percent responses of each school are compared with population, we notice slight change in teachers' approach. Each school has a different composition of teachers and a different set of needs; so we find differences in their preferences. The school 5 received inputs from the 'effectiveness training' as well as went through some experience of school's 'Tapapurti celebration preparation' year. So there is more impact on qualities as Novelty and Excellence. The school 2 was more cooperative, and it is reflected in their preference for Flexibility.

The aggregate results of Survey population teachers' responses to the Test of Values show very clearly that teachers value *Discipline, Desire to learn, Confidence, Cooperation, and Perseverance* distinctively more than other qualities. When the post-test performance of the experimental group as a whole (excluding school 5) is compared with population, it seems that it has not diverted from population norms to a large extent, however it has shifted towards some other qualities also. At least some teachers have started valuing *Flexibility, Excellence, and Novelty*. It may be noted that *Flexibility* was among 5 least preferred in population. The spread on more qualities as compared to the concentration on a few as seen in population, indicates teachers' broadened awareness.

The results are more clearly seen in the figure 6.6.

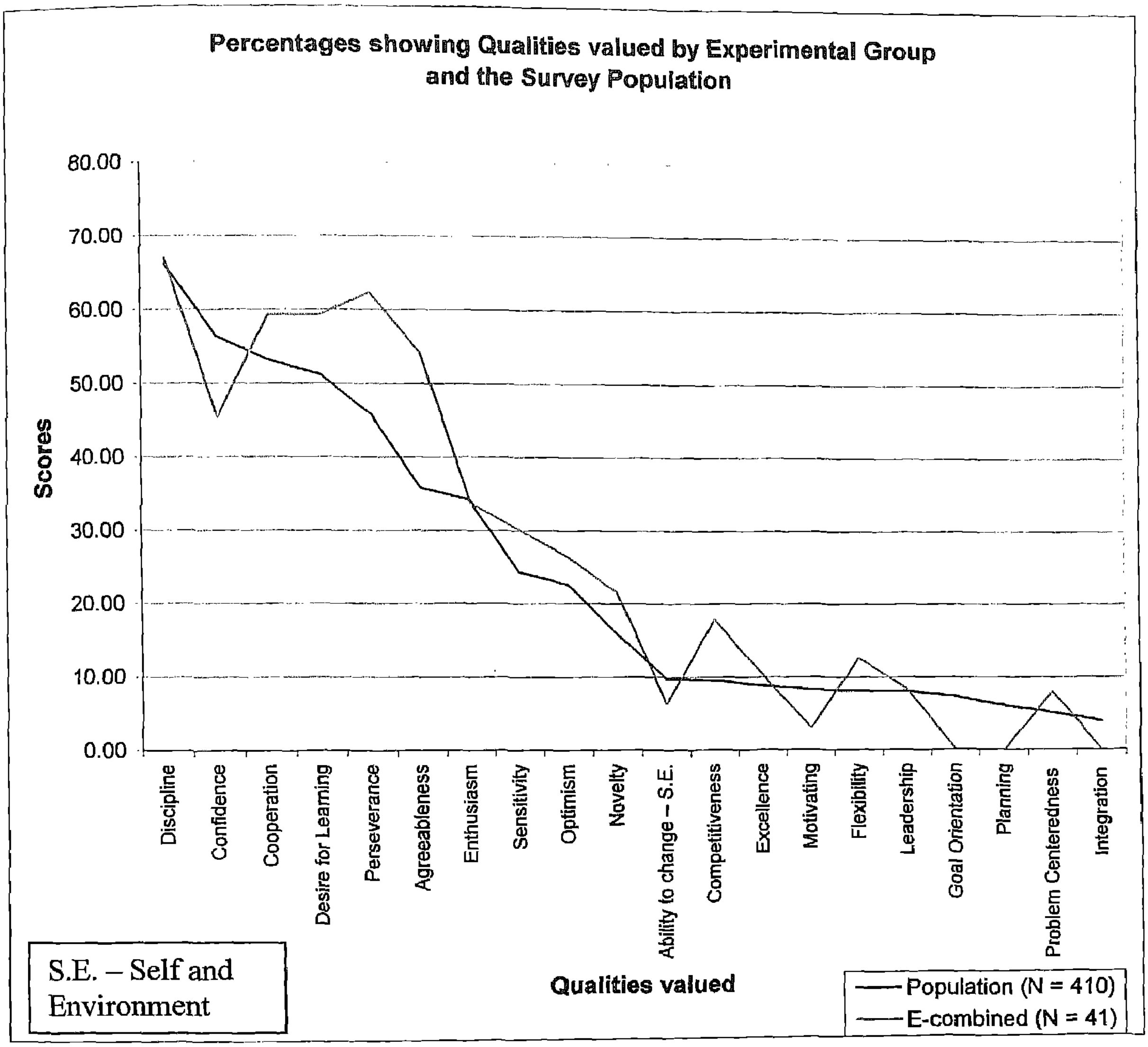


Figure 6.6

For interpretability of the graph, the qualities are given in the descending order of percent responses by population. The Experimental group agrees with the population to some extent with respect to qualities valued more but the slope of the graph is not the same. The weightages are different, and spread is more.

To sum up in the light of the general hypothesis, it may be noted that the hypothesis (1) is only partially proved. The training showed significant effects on cognitive abilities but not on commitment and motivation.

## Effect on Students

What is the effect of teachers' training on students? Will it help students improve scholastic ability, interest in learning and performance in examination?

The second general hypothesis is that 'there will be improvement in students' scholastic performance, motivation and attitude towards learning as a result of improved quality of teachers.

For pre-test post-test comparison, the students who were present for both the tests were selected and the results are evaluated through the statistics for correlated Means. Table no. 6.12 presents results of Scholastic Ability Test for Experimental Group.

**Table No. 6.12 : Descriptive and Inferential Statistics of Scholastic Achievement Test Scores (Pre-Test and Post-Test) of Students from Experimental Group (N = 112)**

| | Range | Median | Mean | SD | DBM | t (paired) | Sig. | Survey Population Mean |
|---|---|---|---|---|---|---|---|---|
| **Marathi** | | | | | | | | |
| Pre -Test | 5-18 | 10.00 | 10.58 | 2.42 | 1.33 | 4.86 | 0.000 | 10.65 |
| Post – Test | 5-18 | 12.00 | 11.91 | 2.49 | | | | |
| **Maths** | | | | | | | | |
| Pre -Test | 1-10 | 4.00 | 3.83 | 2.15 | 1.63 | 5.46 | 0.000 | 4.79 |
| Post – Test | 1-12 | 5.00 | 5.46 | 2.74 | | | | |
| **General Intelligence** | | | | | | | | |
| Pre -Test | 1-14 | 7.00 | 7.11 | 3.30 | 1.17 | 2.84 | 0.005 | 7.80 |
| Post – Test | 1-15 | 8.00 | 8.28 | 3.02 | | | | |
| **Total SAT Scores** | | | | | | | | |
| Pre -Test | 5-42 | 21.00 | 21.18 | 6.46 | 4.47 | 5.60 | 0.000 | 23.02 |
| Post – Test | 11-40 | 25.00 | 25.65 | 6.66 | | | | |

The students from experimental group show significant gain on SAT subtest scores and the total score. Since these results can not be compared with control group, they are seen on the background of population norms. Figure 6.7 reveals the picture.

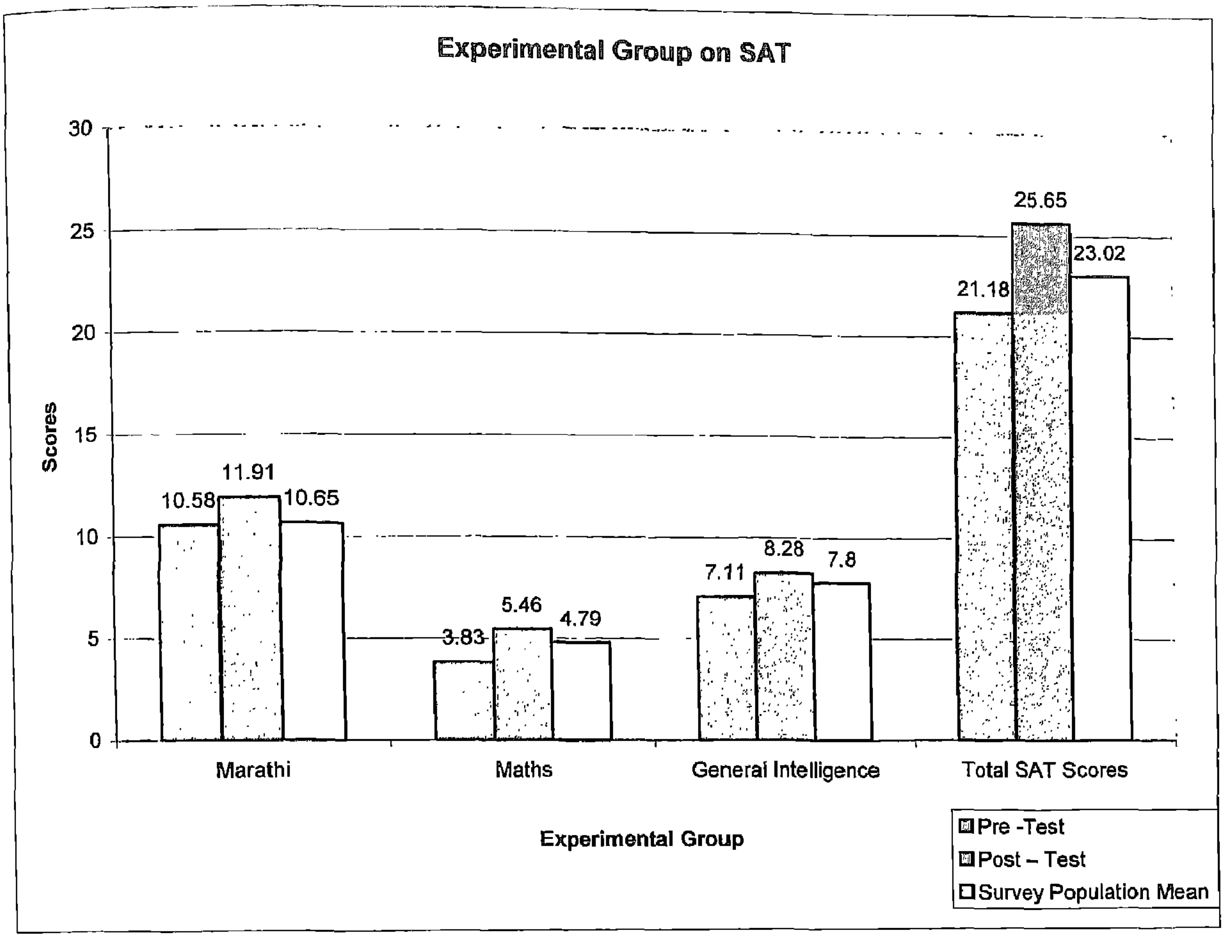


Figure 6.7

We find that post-test scores are always better than population Means. The control group schools were not available at the scheduled time for students' tests which was conducted before the annual exam. The students would have been available only in the next year when they would enter into higher class, which was of no use.

## Students' School Performance

The effect of teachers' training has to be reflected in students' behavior. The Scholastic Achievement, Drop out rate and Annual Examination Marks were selected as more direct indicators of students' school performance. Table no. 6.13 shows percentage of total Annual Examination Marks.

**Table No. 6.13 : Descriptive and Inferential Statistics of Annual Examination Total Percent Marks of Students from Experimental Group (N = 101)**

| Year | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Pre –Test 2002 March | 19.50 – 86.50 | 44.50 | 47.19 | 14.46 | 1.038 | 2.506 | 0.01 |
| Post – Test 2003 March | 35.20 – 88.00 | 44.85 | 49.01 | 11.25 | | | |

The students who were present for both Pre-test and Post-test were selected for the analysis. School marks were available from office records. All students from 5th to 7th are taken together. It is seen that performance of students in Annual Examination has been improved slightly but significantly. The Mean of Post-test score is greater, SD is reduced and the lower limit of the range is lifted up remarkably. This change is quite satisfactory.

For Annual Examination marks only office records were sufficient. Since annual examinations are conducted mostly in the same period of the year, it was possible to use the data from one control group school which cooperated willingly. Though the number of students from this group is small due to non availability of pretest scores of many students, whatever results are at hand, are presented here in the table no. 6.14.

**Table No. 6.14 : Descriptive and Inferential Statistics of Annual Examination Total Percent Marks of Students from the Control Group (N = 17)**

| Marks | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Pre –Test | 35.50 - 79.29 | 42.67 | 49.04 | 13.69 | -1.17 | -0.935 | N.S. |
| Post – Test | 33.87 – 77.33 | 43.14 | 47.87 | 13.30 | | | |

Due to large disparity in N the results cannot be compared with Experimental Group, but it can be seen that the pre-test post-test difference is not significant. There is a slight lowering of range and the Mean. Since the difference is not significant, it is not explained.

## School drop-outs

The drop-out percentage is considered to be one of the indicators of teachers' effectiveness. The number of children leaving the school in between the academic year is taken as the measure of 'drop-outs'. The school does not have always the authentic records giving reasons for leaving the school, except for transfer of parents; but such cases were hardly noted. Those who do not have interest in learning and cannot afford to 'waste' their time, prefer to join their parents to earn their livelihood or doing household chores. These are the real drop-outs. There are some students who go to other schools for better education after standard 7th. They are not 'drop-outs' but their leaving or not leaving the school speaks about quality of education.

Though teachers from standards 5th to 8th were included in the sample under training efforts were concentrated on std. 7th in the school 1 and school 2, and std. 6th in the school 4. Table no. 6.15 shows drop-out percentage in two years - the year of programme for teachers (2002-03) and the earlier year (2001-02) - for the focused standard and the remaining standards.

**Table No. 6.15 : Schoolwise students' drop-out percentage in the year 2001-02 and 2002-03**

| School | | Year 2001-02 | | | | Year 2002-03 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **5th** | **6th** | **7th** | **8th** | **5th** | **6th** | **7th** | **8th** |
| **School 1** | Drop out % | 8.70 | 7.14 | 21.62 | 20.11 | 23.81 | 23.33 | **8.57** | 25.00 |
| | Total N | 23 | 28 | 37 | 174 | 21 | 30 | 35 | 168 |
| **School 2** | % | 3.17 | 11.27 | 16.22 | 18.66 | **0.00** | 22.00 | **11.84** | **16.23** |
| | Total N | 63 | 71 | 74 | 134 | 46 | 50 | 76 | 154 |
| **School 4** | % | 7.48 | 7.86 | 2.02 | 21.97 | **6.98** | **6.48** | 8.20 | **18.85** |
| | Total N | 107 | 140 | 99 | 132 | 129 | 108 | 122 | 122 |

The drop out percentage seems to be reduced noticeably in certain classes (7 out of 12). It is always so in the focused classes. For example, in the School 1 standard 7th, during the year 2001-02 the N was 37 and the drop-out percentage was 21.62. Next year when teachers were under training, in the same standard the drop-out percentage was 8.57. Because of activities in the school, and the inter-active learning, probably children experience the process of learning and enjoy the lively environment. The drop-out rate is reduced in all 3 classes focused by teachers. Some of these teachers who were also teaching to other classes and were keen on implementing what they learnt, did so also in their own classes and had favourable results.

## Teachers' Ratings of Change in Students' Behavior

In the School 4, teachers found it rather difficult to implement the enrichment plan for all 3 grades, 5th, 6th and 7th. Then it was decided to focus on the whole class of grade 6th. But it was essential to relieve the children and teachers of this class from the pressure of annual exam. They were afraid of temporary lowering of performance in examination. So the Principal granted the request and assured them that examination performance of children would not be related to evaluation of teachers' work.

Then the enrichment activities were conducted by the teachers. The list of activities in the form of competitions and projects has been given in Appendix IV. After a month's gap they were asked to rate all children on five point scale for observed change in their usual behavior. The scale included 11 characteristics or behavioral specifications related to children's performance and behavior in the school. The teachers were not aware of this scale and the evaluation task while conducting the activities. Table No. 6.17 shows distribution of children on five point scale.

**Table No. 6.16 : Frequencies of Children Rated by Teachers on Five Point Scale of Behavioral Change**

| **Characteristics** | Low | **Teachers Ratings** |  | High |  |  |  |
|---|---|---|---|---|---|---|---|
|  | **1** | **2** | **3** | **4** | **5** | **Total Points** | **Total** |
| Interesting Learning | 4 | 17 | 16 | 8 | 2 | 128 | **47 ⅄** |
| Multisided Thinking | 8 | 14 | 18 | 7 | 2 | 128 | **49** |
| Confidence | 8 | 13 | 16 | 11 | 1 | 131 | **49** |
| Cooperativeness | 7 | 16 | 12 | 10 | 4 | 135 | **49** |
| Concentration | 5 | 18 | 18 | 5 | 3 | 130 | **49** |
| Interesting Reading | 5 | 15 | 11 | 9 | 9 | 149 | **49** |
| Spontaneous Participation in Extra-curricular Activities | 12 | 11 | 16 | 8 | 2 | 124 | **49** |
| Questioning | 13 | 19 | 11 | 5 | 1 | 109 | **49** |
| Participation in Competitions | 1 | 13 | 11 | 6 | 5 | 109 | **48 ⅄** |
| Shouldering Responsibility and Leadership | 11 | 19 | 16 | 1 | 2 | 111 | **49** |
| Keen Observation | 23 | 6 | 13 | 6 | 1 | 103 | **49** |
| **Total** | **109** | **161** | **158** | **76** | **32** |  |  |
| **Percentage** | **9.91** | **14.64** | **14.36** | **6.91** | **2.91** |  |  |

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| $\chi^2$ **df = 10** | **29.76**** | **11.13** | **5.72** | **10.29** | **19.71*** |

** sig. at .01 level    * sig. at .05 level

⅄ Some children could not be rated, so N is less.

Except for the last characteristic (No. = 11) where teachers have given lowest rating for nearly half of the group, there is noticeable change in most of the characteristics. But the ratings by teachers immediately point out that teachers observed more change in certain behaviors than others. The frequency analysis of characteristics receiving rating 1 and rating 5 shows $\chi^2$ to be significant; for rating 1 ($\chi^2 = 29.76$, df = 10, $p<0.01$) it is highly significant while for rating 5 ($\chi^2 = 19.71$, df = 10, $p<0.05$) it is significant at 0.05 level. It is seen in table no. 6.16.

A very encouraging observation is that children have started taking more interest in reading and showing more concentration. *Confidence, enthusiasm for learning, thinking from different angles or divergently*, are also improved noticeably. Some more efforts for planning of activities, and change in teaching methods will be needed to develop '*keen observation, initiative, shouldering more responsibility and asking questions*.'

## Students' Learning Orientation

What is the impact of teachers' training on students' interest and orientation in learning? It is verified through comparison of students' scores on 'Students' Learning Orientation Profile' (SLOP). The results are presented in the table no. 6.17.

**Table No. 6.17 : Descriptive and Inferential Statistics of Students' Learning Orientation Profile (SLOP) Test Scores (Pre-Test and Post-Test) of Experimental Group (N = 119)**

| | Range | Median | Mean | SD | DBM | t | Sig. |
|---|---|---|---|---|---|---|---|
| **PEDOL** | | | | | | | |
| Pre -Test | 12 – 32 | 27.00 | 26.37 | 4.61 | 0.43 | 0.84 | N.S. |
| Post – Test | 9 - 32 | 27.00 | 26.80 | 3.83 | | | |
| **ADOL** | | | | | | | |
| Pre -Test | 11 - 31 | 21.00 | 20.89 | 3.57 | -0.38 | 0.86 | N.S. |
| Post – Test | 13 - 30 | 21.00 | 20.51 | 3.29 | | | |
| **INJOL** | | | | | | | |
| Pre -Test | 11 - 32 | 26.00 | 25.76 | 4.48 | 1.10 | 2.36 | 0.02 |
| Post – Test | 12 - 32 | 28.00 | 26.86 | 3.84 | | | |
| **APAL** | | | | | | | |
| Pre -Test | 6 - 32 | 17.00 | 17.36 | 4.48 | -0.26 | -0.42 | N.S. |
| Post – Test | 9 - 51 | 16.00 | 17.10 | 5.45 | | | |
| **INVOL** | | | | | | | |
| Pre -Test | 8 - 32 | 26.00 | 25.15 | 4.86 | 0.21 | 0.37 | N.S. |
| Post – Test | 9 - 50 | 25.00 | 25.36 | 4.88 | | | |
| **EXOL** | | | | | | | |
| Pre -Test | 13 - 32 | 26.00 | 25.84 | 4.56 | -0.45 | -0.86 | N.S. |
| Post – Test | 13 - 32 | 26.00 | 25.39 | 4.38 | | | |
| **SIGOL** | | | | | | | |
| Pre -Test | 9 - 32 | 24.00 | 23.36 | 3.97 | 0.23 | 0.42 | N.S. |
| Post – Test | 13 - 55 | 24.00 | 23.59 | 3.79 | | | |

We find in this comparison very slight changes except for the score on INJOL (Intrinsic Orientation in Job related Learning), where the post-test score is greater than the pre-test and the difference is moderately significant. The Means on ADOL (Assessment Domination Orientation in Learning), APAL (Apathy Towards Learning) and EXOL (Extrinsic Orientation in Learning) are reduced a little and those on PEDOL (Personality Development Orientation in Leaning),

INVOL (Involvement in Learning) and SIGOI (Significant other Orientations in Learning) are improved a little. These changes indicate a certain direction of effect on SLOP. More involvement, intrinsic orientation and interest in performance, rather that assessment and external criteria. But for more change and on different dimensions, there must be a change in evaluation system and the tasks for learning. Teachers receiving training implemented some ideas for interactive learning; that changed the atmosphere and created more interest among students but it was not sufficient to change their orientations significantly. More efforts on a larger scale and for a longer time are essential.

## Conclusion

On the whole we find that students in the Experimental group show highly significant improvement in school related performance as seen in SAT and Annual Examination Performance. The reduced Drop-out Rate indicates motivation and improved school performance. It does show favourable change though is not tested for statistical significance.

In Learning Orientation Profile the change noted through test is very little. But in one of the Experimental Schools (No. 4) teachers implemented a small enrichment programme for 6th standard and their observations indicate positive and significant change in students' interest in learning.

Thus the hypothesis (2ii) that 'there will be improvement in students' scholastic performance, motivation and attitude towards learning', is partially supported.

# Section VII

## Summary and conclusion

As stated in the title, the whole research was directed towards evolving *'In-service Training Programme for Teachers for Improving Their Effectiveness'*. The effective teacher is considered as 'a teacher capable of modifying the behavior of children and the school climate positively for learning'. For teacher effectiveness the quality of teaching was viewed with a broader perspective.

***Three objectives*** were framed to deal with i) identifying needs of training, ii) designing and conducting suitable training programme, iii) and verifying the effect of training programme on school climate and on students' performance.

***In part I, the survey*** was undertaken to identify the needs, for which data was collected from 30 schools involving 426 teachers and 1154 students. The scores of teachers on tests of Mental Abilities, Motivation, Commitment and Values were analyzed through comparison of Private vs. Government schools, Developed vs. Undeveloped area, and Enriched vs. Non-enriched school climate. Students' scores on tests of Scholastic Achievement and Learning Orientation were also studied through similar comparison. Teachers' scores were further compared for upper and lower quartiles of students' SAT scores.

All these comparisons revealed differences regarding Mental Abilities of teachers quite clearly in favour of Private, Developed and Enriched Environment Schools. The differences were more marked in Enriched vs Non-Enriched comparison.

In affective domain including motivation, commitment and values no such differences were noted. Teachers were mostly similar in this respect in all comparisons except one in which the effect of Enriched Environment deserved some attention. When in all comparisons teachers were significantly more motivated 'towards Self' than 'towards Students', teachers in Enriched Environment did not show such difference in Achievement Orientation towards Self and Students. Though it is a very small evidence it is certainly indicative of the impact of Enriched Environment.

When students were compared in the same way i.e. Private vs. Government, Developed area vs. Undeveloped area and Enriched vs. Non-enriched Environment, the differences were significantly in favour of former category (i.e. Private, Developed area and Enriched environment) on both SAT and SLOP. They were larger and more significant in Enriched vs. Non-Enriched comparison. When teachers from High and Low SAT score schools were compared again the difference was significant in respect of Mental Abilities but not in affective domain. Thus Enriched School Environment seems to be decisively congenial and facilitating Teachers' Mental Abilities and in turn Students' Scholastic Ability and proper Learning Orientation.

***In part II, a training programme*** was designed referring to the results of suvery, brief overview of previous research and our own experience. Teachers (N = 56) from five schools (3 govt. and 2 private) participated in the training programme. There was reshuffling of the group in between the training and at times the programme had to be conducted separately in different groups considering the practical difficulties of the schools and the teachers.

The training programme was spaced over 20+ days for each school and consisted of a variety of relevant theoretical inputs and practical experiences through different methods as brainstorming, group discussion, group task, projects, management games, relaxation, etc. Teachers selected topics for individual self-study through which they did some experimentation and attempted new tactics in the class-room. They also conducted group projects involving students.

In brief, the *focus of training programme* was more on stimulating independent thinking with broader perspective, expressional skills, understanding of multifaceted abilities of students, and interaction with students and the environment beyond class-room for changing school climate. A residential programme designed for deeper psychological inputs for affective domain could not be implemented as per the plan.

*The effect of teachers' training* was very *emphatic on School Climate.* The difference in pre-test and post-test assessment was significant in Schools under training and but not so in the control school. It was also *clearly and significantly seen on Mental Abilities of teachers* more on the tests measuring abilities involved in independent problems solving and creative thinking.

In *affective domain no such clear impact* was revealed. However, a few observations deserve attention. The score on Achievement Motivation showed slight but significant increment both for

Self and Students. On commitment also, there is a little shift from Receiving to a higher level of Responding. The significance was noticed by $\chi^2$ test. The spread of values after training was some what expanded, and it included a quality like flexibility which was among the 'least preferred' before training. These findings are indicative though not conclusive. On the whole, the variables as Commitment, Motivation and Values that constitute a deeper covert part of the affective domain, had less effect of training.

*Impact on students was more meaningful criterion to judge* the effect of teachers' training. It was also more challenging. Hence students' Scholastic Achievement, and Annual Examination Marks, the more explicit measures of students' performance, were studied before and after teachers' training. *The improvement on both these measures was highly significant.* Annual Examination Marks of the control group students did not show any significant change. This group was not available for other measures. *The Drop Out rates* of the 'class focused' by the teachers also showed *positive impact of training*. These observations are not strongly supported by the scores on the test of Learning Orientation (SLOP). However, teachers' observations of students in one of the schools were very conclusive and favourable. Activities beyond text-book and beyond *class-room improved students' interest in learning.*

There were two major limitations that hampered the research plan. They should be briefly noted. Firstly, a part of the residential programme designed for deeper psychological inputs in affective domain, could not be conducted as per the plan. Secondly, the control group was not always available at the proper time for the post test, hence could not be used for all measures of pre-test post-test comparisons. However the investigators tried to overcome these limitations in the most appropriate way.

Finally, it may be concluded that – the training programme showed improvement in the School Climate, teachers' Mental Abilities and in students' Scholastic Achievement, Annual Examination Marks and Drop-Out Rates.

There was not noticeable change in affective domain of teachers. However they were more effective in changing the school climate and improving students' performance.

The implications of results that deserve attention are : i) Enriched School Environment , teachers' Mental Abilities and Students' Scholastic Ability go together, ii) Training certainly can have impact on all these factors.

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# APPENDICES

# APPENDIX I

## Testing the significance of difference between two means when the groups are partially independent

Many times the researcher wants to compare two groups which are not totally independent, nor fully correlated. Here are a few examples : comparing the performance of 7th grade students or 7th grade batch for a few years or the average performance of the Sports Team in different tournaments, or the average educational level of a certain society over a period of time, etc. In all these comparisons the researcher considers the 'groups' to be independent or uncorrelated inspite of some common subjects or the repeaters. Here the whole class or a team has an 'identity'.

Another reason that allows the researcher the consideration of two groups as independent groups and two Means as uncorrelated means is that this condition is more general and strict and not biased and favourable for the significance level of difference. If correlation between means is ignored $\sigma_{dm}$ / $SE_{dm}$ is more and 't' is less. When 'r' is inserted into the formula 't' is increased. It is clear from the following formulae.

SE of difference between two Means

| Uncorrelated | Correlated |
|---|---|
| $SE_D = \sqrt{\sigma^2_{M1} + \sigma^2_{M2}}$ | $SE_D = \sqrt{\sigma^2_{M1} + \sigma^2_{M2} - 2r_{12}\sigma_{M1}\sigma_{M2}}$ |

$$t = \frac{DBM}{SE_D}$$

Hence to get over-all indications in initial analysis there is no harm in using all data 'before' and 'after' the intervention, when some subjects are common and other different, and study the difference without considering correlation between a part of the sample. As a next step performance of correlated groups can be separately studied using appropriate test.

# APPENDIX II

## List of Schools included in the Sample of Survey

| School Code | School Name | Place |
|---|---|---|
| 1 | Shreeram Moreshwar Gogate High School | Devagad |
| 2 | S.P.'s Vidyamandir High School | Kankawali |
| 3 | Rajarshi Shahu High School | Gadhinglaj |
| 4 | Janata Vidyalay | Khalapur |
| 5 | Shree Shivachatrapati Vidyalay | Khalapur |
| 6 | Dr. Paranerkar Maharaj Vidyalay | Khalapur |
| 7 | Shreemant Chatrapati Pratishthan Vidyalay | Satara |
| 8 | Satara Nagarparishad S.N.1 | Satara |
| 9 | Shree Naiminath Jain Vidyalay | Chandawad |
| 10 | Modern Ed. So. Madyamic Vidyalay | Nashik |
| 11 | Government Secondary Ashram School, Vinval | Javvar |
| 12 | Bharati Vidyapith Prashala | Javvar |
| 13 | Government Secondary Ashram School, Pangari | Bhor |
| 14 | Z.P. Welhe Primary School | Welha |
| 15 | Shree Saraswatee Vidyalay | Welha |
| 16 | Junnar Nagarparishad School No.1 | Junnar |
| 17 | Government Secondary Ashram School, Khatkale | Junnar |
| 18 | Government Secondary Ashram School, Tokawade | Rajgurunagar |
| 19 | Dr. Sarwapallee Radhakrishnan Prashala | Bopodi |
| * 20 | Pimpri Chinchwad Muncipal Corporation's High School, Nigdi | Nigdi |
| 21 | M.S.S.H.S. Chinchwad | Chinchwadgaon |
| * 22 | Pimpri Chinchwad Muncipal Corporation's High School, Kasarwadi | Kasarwadi |
| * 23 | Pimpri Chinchwad Muncipal Corporation's High School, Bhosari | Bhosari |
| 24 | Pimpri Chinchwad Muncipal Corporation's High School, Kalbhornagar | Kalbhornagar |
| 25 | Firodia High School | Ahamadnagar |
| 26 | Netaji Subhashchandra Bose | Yerawada |
| 27 | Purandar High School | Sasawad |
| 28 | Bal Vikas Vidya Mandir | Jogeshwaree |
| * 29 | Janata Vidyalay | Pimpri sandas |
| * 30 | Gram Prabodhini | Salumbre |

* : Schools selected for teachers' training

# APPENDIX III

## Details of Training Programme

Most of the training was conducted at the training venue outside the school premise. The details of this part are given in Section A. Some part of the training programme, that required implementation of what was learnt by the teachers, was conducted necessarily at the school itself. The details of this part are given in Section B. These days of practical work with the students were suitably distributed in between the main programme.

### Section A

### Training Days at the Venue Outside the School

**(Day 1)** (Day 1 to day 3 residential)

| | | |
|---|---|---|
| Session 1 | Opening of the programme | Registration, Welcome, Introduction<br>Opening speech by the Principal Investigator and the Co-Investigators.<br>Purpose of the programme, course objectives and the feedback of the survey done by the Investigators. |
| *Break* | | |
| Session 2 | Knowing oneself and environment<br>Planning for change | SWOT analysis<br>Group discussion in relation to SWOT of oneself and the group |
| Lunch Break | | |
| Session 3 and Session 4 | Being a Teacher | Why I am a teacher? Did I get education I wanted? What is the role of the teacher? Am I fit for it? How to adapt with the environment for the development of self and others<br>Brief introduction of concept of 'Panchakosha'. |
| *Evening Break* | | |
| Session 5 | Physical Exercise | Games |
| Session 6 (Pre dinner) | Sharing | Singing together Shlokas by Saint Samarth Ramdas.<br>Spontaneous narrating of life incidences by a few participants. |

## Day 2

| | | |
|---|---|---|
| Session 1<br>(Early morning) | Yogasanas and Pranayam | Warming up exercises.<br>Introduction to Yogasanas - Parvatasan, Padmasan, Bhujangasan, Shavasan, Omkar chanting |
| *Break* | | |
| Session 2<br>and<br>Session 3 | Understanding Multifaceted Intelligence | Introduction to Guilford SOI Model.<br>Simple illustrations in a day-to-day behaviour. |
| Lunch Break | | |
| Session 4<br>and<br>session 5 | Understanding Emotional Development of Children | Learning of emotions.<br>Types of emotions<br>- Characteristic features of children's emotions<br>- Different field for emotional expressions.<br>- Emotional catharsis |
| *Evening Break* | | |
| Session 6 | Physical Exercise | Games and exercise, relaxation.<br>Distribution of books for a next day exercise in expression.<br>Individual reading at night. |

## Day 3

| | | |
|---|---|---|
| Session 1 (Early morning) | Yogasanas and Pranayam | Warming up exercises.<br>Uttanpadasan, Pachhimottanasan, Shavasan, Omkar Pranayam |
| *Break* | | |
| Session 2 | Health Awareness | Introduction to Health Awareness and giving Questionnaire - Health for Women and Health for Students. Diet for students from low income group |
| Session 3 | Creativity | What is Creativity, Brain Storming Technique, Creativity Process, Product and Environment, Important factors of Creativity, Creativity Exercises – uses and observation of given things. |
| Lunch Break | | |
| Session 4<br>And<br>Session 5 | Effective expression – Speaking | Individual exercise of reading aloud – evaluation and feedback.<br>Explaining internal and external factors affecting quality of speech.<br>Internal factors - content, organization<br>External factors – accent, tone, voice, modulation, clarity of speech, body language. |
| *Evening break* | | |
| Session 6<br>(end of the day session) | Summing up | Summing up of the three days.<br>What did I learn?<br>How to apply it in one's own thinking. |

## Day 4

(After a gap of 8 weeks)

| | | |
|---|---|---|
| Session 1 | Revision<br>'Job in me' | Revising earlier topics and feedback of what is done during 8 weeks' period.<br>The exercise relating one's own qualities, success and progress in the job, to the job requirement. |
| Session 2 | Planning for Change | Group discussion for change in oneself. What I will learn, how to overcome weakness<br>Discussion for understanding school environment and starting new activities in schools. |
| Lunch Break | | |
| Session 3<br>And<br>Session 4 | Self-learning<br>Understanding Principles of Self-development (in brief) | Introduction to project method<br>Projects for self learning<br>And projects for students. |
| Session 5 | Yogasanas and Relaxation | Warming up, Practice of yogasanas learnt earlier, relaxation. |

## Day 5

| | | |
|---|---|---|
| Session 1 | Feedback<br><br>Implementing project method | Feedback of what teachers had done in the light of various topics introduced.<br><br>Types of projects in various subjects. Details about conducting the projects for students, listing of projects. |
| Session 2 | Co-curricular activities in the light of Panchakosha concept | 'Panchakosha' concept and activities for students for each kosha (The list of projects and competitions conducted by teachers are given separately) |
| Lunch Break | | |
| Session 3<br>and<br>Session 4 | Reading Skill | Exercises given to teacher for assessing reading comprehension and speed.<br>Speed of perception – words and numbers.<br>What is reading, factor affecting reading speed, process of reading, tips for improving reading skill students and removing hindrances in reading. |
| Session 5 | Yogasanas and Pranayam | Warming up, Yogasanas learnt earlier and Anulom-Vilom Pranayam |

## Day 6

| | | |
|---|---|---|
| Session 1 | Feedback<br>Effective Communication : 'Discussion skills' | Feedback of what teachers had done in the light of various topics introduced.<br>Exercise in group discussion<br>Leading group discussion,<br>Group discussion as a teaching technique<br>Discussion on debatable issue |
| Session 2 | More about project | Simple and small projects, effective implementation by other institution.<br>Abilities involved in learning through project, teaching aids for projects |
| Lunch Break | | |
| Session 3 | Creativity Continued…. | More techniques of creative thinking - visualization, inquiry technique. How to apply technique of creative thinking in the classroom. Preparing exercise on creative thinking in the classroom learning. |
| Session 4 | Effective Expression | Story telling, Pedagogic value of story telling, Art of story telling, Story telling as a method of teaching |
| Session 5 | Yogasanas and Pranayam | Yogasanas learnt earlier and Pranayam |

## Day 7

| | | |
|---|---|---|
| Session 1 and Session 2 | Feedback<br>Writing skill | Reporting and sharing what teachers had done in the schools.<br>Assessing and improving speed of writing, Legible handwriting, Effective writing for announcement and letters, Evaluation of writing, Factors affecting writing skills, Improving writing skill of students |
| Lunch Break | | |
| Session 3 and Session 4 | Listening skill | Games to realize blocks in listening, Listening and completing the story in a group one-by-one, Listening to a message, remembering and interpreting to find a solution |
| Session 5 | Yogasanas and Pranayam | Yogasanas learnt earlier and Kapalbhati and relaxation |

## Day 8

| | | |
|---|---|---|
| Session 1 | Feedback<br>Projects and activities | Reporting of work done and sharing experiences.<br>Project for self study, project for small group, project for the class and for the school<br>Project for action research by teachers |
| Session 2 | Creativity<br>Continued .... | Exercise for morphological analysis.<br>Preparing exercise on creative thinking in the classroom learning<br>How to apply technique of creative thinking in class room |
| Lunch Break | | |
| Session 3<br>and<br>Session 4 | Positive thinking | Group exercise<br>- in listing troubles and grievances<br>- discussion on how to overcome<br>- how to transform situation into an opportunity to learn<br>- how to think positive |
| Session 5 | Physical exercise and Yogasanas | Yogasanas learnt earlier |

## Day 9

| | | |
|---|---|---|
| Session 1<br>and<br>Session 2 | Feedback<br><br>Knowing and interacting with environment | Feedback of the work done.<br><br>Knowing about unique experiments in education :<br>- sugar school (school for children of sugar cane cutters)<br>- programme for rural-talent development<br>- school for gifted,<br>interacting with teachers involved in these experiments. |
| Lunch Break | | |
| Session 3 | Health Awareness | Ayurvedic concept of health |
| Session 4 | Stress Management | Knowing one's own stress<br>What is stress? Why stress?<br>Coping strategies<br>Learning new relaxation techniques |
| | (Towards Shantivan for residential camp) | |
| Session 5 | | Moving around |
| Session 6 | Sharing | Knowing more about activities being conducted in the school, difficulties if any and probable solutions. |

## Day 10

| | | |
|---|---|---|
| Session 1 (early morning) | Yogasanas and Pranayam | Suryanamaskar and Pranayam |
| Session 2 and Session 3 | Motivation for students | Facilitation skills<br>Understanding and using facilitation technique<br>Characteristics of facilitators to motivate students<br>Listing and devising competitions and games based on SOI Model |
| Lunch Break | | |
| Session 4 | Continued ... | Arranging competitions stimulating different factors in cognitive and affective domains<br>Rewards and feedback – Appropriate use of reward and feedback for motivation.<br>Individual and group motivation. |
| | Self-motivation | Management game for achievement motivation<br>Performing a difficult task involving risk. |
| Session 5 | Relaxation | Relaxation, Yoganidra |

## Day 11

| | | |
|---|---|---|
| Session 1 | Feedback<br>Memory | Feedback of work done and sharing experiences<br>Memory an Ayurvedic concept<br>How to improve memory |
| Session 2 and session 3 | Effective communication 'Presentation' | Effective presentation of the report of the self-study / individual project |
| Lunch Break | | |
| Session 2 and session 3 | Continued..... | Evaluation and feedback for improving presentation skills |
| Session 4 | Yogasanas and Relaxation | Yogasanas learnt earlier, relaxation |

## Day 12

| | | |
|---|---|---|
| Whole day | Interacting with the environment | Visit to a model school in rural area |
| | Summing up | Feedback of what was observed<br>Summing up |

## Day 13

| | | |
|---|---|---|
| Session 1<br>and<br>session 2 | Feedback<br>Self-development and Motivation | Feedback of work done and sharing<br>Principles of self development, group discussion for finding application, Maslow's need hierarchy |
| Lunch Break | | |
| Session 3<br>and<br>session 4 | Achievement Motivation<br>Observation of students | Qualities of good teacher, knowing more about successful personalities and sharing real life experiences of facing challenges<br>Preparing checklist for observation of students |

## Day 14

| | | |
|---|---|---|
| Session 1 | Feedback | Feedback of work done and sharing experiences |
| Session 2, 3 and 4 | Effective methods of learning | Concept, technique and demonstration for using of<br>Street play<br>Group song |
| Lunch Break | | |
| Session 2, 3 and 4 | Continued….. | Concept, technique and demonstration for using of<br>Drama<br>Role play<br>Povada / Martial song |

## Day 15

| | | |
|---|---|---|
| Session 1<br>and<br>Session 2 | Post testing | Post testing of teachers on tests of -<br>Mental ability<br>Commitment<br>Values<br>Motivation |
| Lunch Break | | |
| Session 3<br>and<br>Session 4 | Presentation | Presentation and discussion on individual and group projects done by students and teachers (List given separately) |

## Day 16

| | | |
|---|---|---|
| Session 1<br>and<br>Session 2 | Individual Feedback, and interaction with each other | Interactive group work, one or two teachers from each of 5 schools formed a group. Each one presented a brief report on worked done in the school. The group shared experiences in conducting new activity in the school and students' response, etc. |
| Lunch Break | | |
| Session 3<br>and<br>Session 4 | Valedictory | Representative of each school presented a report<br>Concluding remark by the Principal Investigator and Co-investigators.<br>Speech by the Educational Officer.<br>Distribution of Certificates and thanks giving. |

## Section B

## Training Days in the School

This part of the training programme was conducted at the school as per the convenience of each school. The overall programme and number of days were mostly similar for all five schools but the details varied as per the situations. The investigators and resource persons went to each school during these days. Teachers did some experiments in the classroom and on the field. The common outline of this part of the programme is given here.

**For Classroom work**

Day 1 Understanding the methods and tactics of various thinking skills in the light of the on-going curriculum

- conducting some trials
- planning the activity

Day 2 Thinking skill exercises / activities conducted by teachers in the classroom.

- Observation by investigators
- Feedback by students
- Discussion with teachers comparing the students' response to the similar topic introduced in a conventional way.

**For group study requiring 8 – 10 days**

Study topics : School 1 – Medicinal Plants
School 2 – Rice Cultivation
School 3 – Holy place – Alandi
School 4 – Kamadhenu – Milk production and distribution
School 5 – a) Pollution of Pavana river
b) Family income – expenditure

Day 1 Planning, choosing the topic and the class of students, defining the problem and scope of the study, preparing questionnaire and record sheet for data collection. Discussion for application of the study in school subjects.

Day 2 More information about the topic, work distribution among teachers, making groups of students and explaining whole study to the students.

2 – 4 days

Actual visits and interviews.

4 to 5 days during school time or later or in holidays

Collecting all information, sorting, classifying, preparing a report

# APPENDIX IV

## List of Projects

**Projects done by teachers with students (Group Projects)**

Historical significance of the town / village
Kamdhenu – a study of milk supply and milk product
Environmental study of Allandi – a religious place
Rice crop
Income and expenditure of a family
Aurvedic medicinal plants

**Individual Projects by Teachers**

Effective letter writing
Grammar
Punctuation
Vocabulary building
Effective essay writing
Learning through role play / drama
Improving memory
New techniques for mathematics
Use of visualization in science teaching
Improving study skills through memory training
Use of visualization for the concept of quadrilateral
Improving memory through making charts
Use of visualization for teaching Hindi
Use of visualization for understanding chemical formulae
What is a line?
Visualization as an general exercise
Poetry teaching
Experiments for explaining the concept of sale
Preparing word book

Essay writing

Experiential method for learning geography

Learning mathematics through activities

Learning colour concept and its relevance for other subjects

Collection of poems and stories

**Competitions for Students**

A] Write words starting with the given letter
From the given paragraph find out as many words as possible containing the given letter
Name round objects / red objects
Solving given simple examples as fast as possible

B] Picture drawing, Mimicry, Singing, Dance, Recitation (poems, multiplication tables, Shlokas' etc), Story telling

C] Ring throw, Three leg race, Bamboo dance, High jump, Long jump, Running, Blind fold running race

D] Climbing a tree, Suryanamaskar, Langadi, Kabaddi, Kho-Kho

**A & C compulsory**
**B & D Optional**

# APPENDIX V

## List of Contributors and Core Team

Dr. Usha Khire (Principal Investigator)

Shri. V.N. Abhyankar (Co-Investigator)
Smt. Devayani Pandit (Co-Investigator)
Smt. Pranita Jagtap (Project Fellow)
Smt. Tanuja Ghatpande (Project Fellow)

### Resource Persons

| | |
|---|---|
| Dr. Girish Bapat | Eminent Educationist – Director Jnana Prabodhini |
| Dr. Usha Khire | Eminent Psychologist – Principal Investigator |
| Shri. V.N. Abhyankar | Eminent Educationist – Co-investigator |
| Smt. Devayani Pandit | Creativity Researcher – Co-investigator |
| Dr. Sujala Watve | Psychologist – Expert |
| Dr. Anagha Lavalekar | Psychologist – Expert |
| Shri. Vivek Ponkshe | Principal of the School for gifted |
| Dr. Mandakini Nagarkar | Psychologist – Expert |
| Dr. Arti Rajhans | Medical Practitioner |
| Dr. Shriprasad Bavadekar | Ayurved Vaidya |
| Smt. Anjali Saygaonkar | Educationist |
| Dr. P.G. Vaidya | Eminent Educationist |
| Dr. A.L. Deshmukh | Eminent Educationist |
| Shri. Shamrao Karale | Eminent Educationist |
| Smt. Mrudula Thatte | Psychologist |
| Smt. Charuta Puranik | Teacher – Special Programme |
| Smt. Manjusha Keskar | Teacher – Special Programme |
| Smt. Gitanjali Deogaonkar | Teacher – Special Programme |
| Shri. Milind Naik | Teacher – Special Programme |
| Shri. Shivaji Konde | Teacher – Special Programme |
| Shri. Sadanand Deshpande | Teacher – Special Programme |
| Dr. Vanita Patwardhan | Psychologist – Expert |
| Shri. Vyankat Bhatane | Principal – Model School in rural area |
| Smt. Pranita Jagtap | Psychologist – Project Fellow |
| Smt. Tanuja Ghatpande | Psychologist – Project Fellow |

# APPENDIX VI

## Sample of Tools

### Tool for Schools

School Environment Questionnaire

### Tools for Teachers

#### Tests of Mental Abilities

i) Cognition of Semantic Implications (CMI)
ii) Divergent Semantic Relations (DMR)
iii) Convergent Figural Classes (NFC)
iv) Cognition of Behavioural Relations (CBR)

#### Teachers' Motivation

i) Motivation Questionnaire (Self and Student)
ii) Motivation Questionnaire (Intrinsic and Extrinsic Motivation)

#### Values Checklist

Commitment

### Tools for Students

i) Scholastic Achievement Test (SAT)
ii) Students' Learning Orientation Profile (SLOP)

# School Environment Questionnaire

*JNANA PRABODHINI'S INSTITUTE OF PSYCHOLOGY (JPIP)*
*Jnana Prabodhini Bhavan,*
*510 Sadashiv Peth,*
*PUNE : 411 030*

## *A LITTLE ABOUT YOUR SCHOOL : PART I*

INSTRUCTIONS :

In this inventory you have been asked about many things related to your school, e.g. teaching methods, various facilities available, co-curricular and extra-curricular activities undertaken for the students etc. The information will be used only for the research purposes. Therefore state your personal opinion without hesitation. Give details wherever necessary. Ask for the explanation in case of doubts.

In each question many choices are given you have to give your responses by making tick mark (✓ ) for as many choices as applicable.

==========================================================================

**Informant's Name :** ______________________________

**Designation :** ______________________________

**School's Name and Address :** ______________________________

______________________________

______________________________

1. Do you feel contented while working in this school?

   *Very much, Much, Average, Less, Very less*

2. Do you feel that the teachers from your school have friendly relationships with the students?

   *All of them, Many, Some, Few, Very few*

3. Do you feel that students from your school give due respect to the teachers?

   *Very much, Much, Average, Less, Very Less*

4. Do you get help whenever you seek from your co-teachers?

   *Always, Many a times, Some times, Few times, Very few times*

(1)

## Cognition of Semantic Implications (CMI)

: 136 :

Instructions :

Four names of common things are given in this test. You already know their use in day to day life. Now imagine whether you can use these things with some modifications for certain other novel purposes. Which may or may not be practical.

Sample Problem :

' Slippers '

Slippers are used as footwear. Apart from this use what practical improvements can you suggest in 'slippers'?
For other uses -

(1) They should have compartments.
(2) They should be of folding type.

If slippers have compartments you can use them for storing something. Similarly if they are of folding type it will become very easy to carry them. Here the use, namely, 'Footwear' remains unchanged as before.
Write these two answers in front of Sample answers, in your answer-sheet one below the other.

Solve the given problems in the same way.

Keep in mind that,

* You should suggest at least two improvements for each object. You are, however, free to write more than two improvements.

* The suggested improvements should be useful ones.

* You need not think whether these improvements are possible or not.

There are 4 problems in this test.

For Examiners Only :

Time : 7 mins.

* Possible Answers : Size should be variable, design should be variable, the height of the sheets should be variable, colour should be variable.

(Elicit only two answers from students).

# Divergent Semantic Relations (DMR)

: 333 :

Instructions :

In this test, some objects are given. You have to think of as many of their properties as you can and then find other objects each having same properties.

Sample Problem :

' Land '

While answering the question 'What is the nature of the land?' in various ways, we think of its different properties. It can be of 'different colours' like black, red, grey, etc. Now what other objects shows these characteristics/property? For e.g. - Cloth can also be of different colours. In the same way, another property of land is that 'Plants grow on the land'. Plants also grow in water. Hence, write your answers in front of Sample 'A' and 'B' in your answer-sheet as given on the blackboard.

| Properties | What else like that |
|---|---|
| 1) Has different colours | Cloth |
| 2) Plants grow on the land | Water |

What other characteristics does land have? Can you suggest an object for each characteristic? Raise your hand if you can. *

Write the answers in front of 'C' and 'D' in your answer-sheet as given on the blackboard.

Solve the test in the same way.

Keep in mind that,

§ For each answer, you must suggest a different characteristics/ property of the given object.@

In this test, two objects are given.

For Examiners Only :

Time : 10 mins.

* Probable Answers :

| Properties | What else like that |
|---|---|
| Porous | Sponge, cotton, cloth |
| Rough | Surface of trunk of a tree |
| Contain salts | Water |

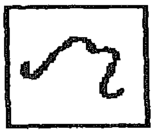
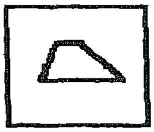
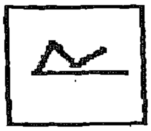
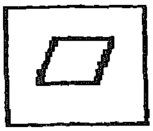
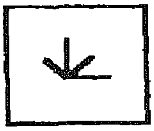
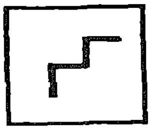
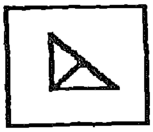
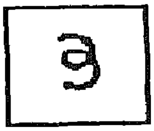
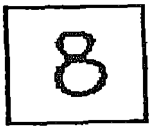
@ You have to suggest only one object for each property.

## Convergent Figural Classes (NFC)

### Test 412

**Instructions:**
In this test, there are nine figures in each problem. You have to form three groups, each containing three figures.THe figures in each group should have certain common characteristic.

**Sample Problem:**

| 1 | 2 | 3 |
|---|---|---|
|  |  |  |
| 4 | 5 | 6 |
|  |  |  |
| 7 | 8 | 9 |
|  |  |  |

Here Figures 1, 8, 9 are made up of curved lines. You will find this particular characteristic only in these three figures. Similarly, find the figures for group 2 and group 3.

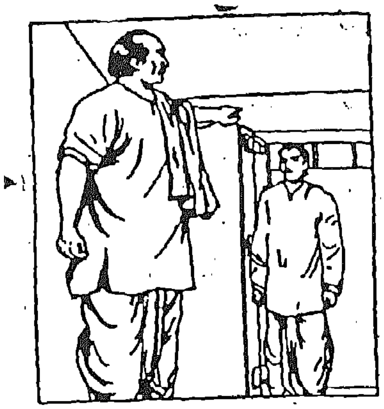
**Bear in mind:**
All nine figures should be classified in three groups. You can choose the answers as they occur to you.
There are four problems in this test
Test time is 3 minutes

2, 4, 7 – 4 lines & are closed figures.
3, 5, 6 – 4 lines & are open figures.

INSTRUCTIONS :

In this test each problem has a picture of two persons. One of the persons is marked by an arrow. You have to find out what the person marked by the arrow is saying from the given choices.

Sample Problem (A) :



Choices

[1] Have a seat. I will be coming within a few minutes.

[2] I don't want to listen to you. Get Out!

[3] You are saying one thing and doing something else.

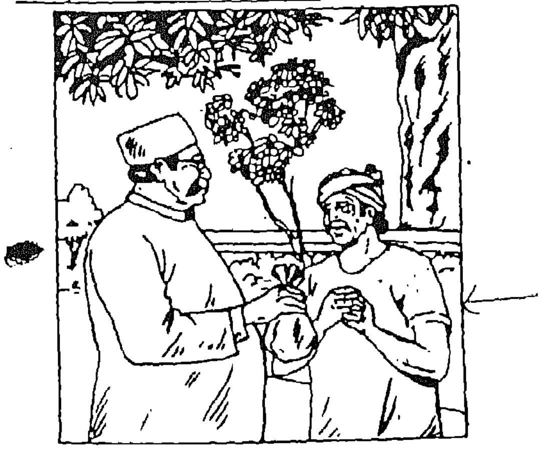
[4] You seem to be a brave fellow.

Carefully observe both the persons in the picture. See their faces, hands and the way of standing. What are they thinking about each other? An arrow is pointing towards the man on the left, what will he say?

It seems that the man on the left is very angry and scolding the other person. The other person has not liked it and wants to say something. Now read, the choices. Which statement matches with the expressions of the man marked by the arrow as well as with the picture on the whole? How?

Statement No. (1) does not match with the picture, as here the person speaking is welcoming the other person. No. (3) expresses disapproval rather than anger. No. (4) is a comment, which may reveal appreciation or contempt. But the comment does not suit the other person, as he does not look brave or confident at all. The only statement matching to the expressions of both the persons is No.(2). Hence write ' 2 ' in front of sample problem A in your answer sheet.

Sample Problem (B) :



Choices

[1] I don't want this kind of money.

[2] Sir, please forgive me. I should not have touched that purse.

[3] I did not steal this purse. I have found it.

[4] Why are you offering me such a big reward, Sir? I have not done much for you.

## Motivation Questionnaire (Self and Student)

## ज्ञान प्रबोधिनी संशोधन संस्था

नाव : ______________________ इयत्ता : __________ तुकडी : __________

शाळेचे नाव : ______________________

तालुका : ______________________ जिल्हा : __________ चाचणी दिनांक : __________

खाली काही विधाने दिली आहेत. प्रत्येक विधानासाठी अ, ब, क व ड असे चार पर्याय आहेत. पर्यायांसमोर स्वत:साठी व विद्यार्थ्यांसाठी असे दोन स्वतंत्र स्तंभ आहेत. दिलेल्या पर्यायातील कोणता पर्याय आपल्याला व्यक्ती म्हणून जास्त लागू पडतो. तसेच विद्यार्थ्यांना शिकविताना आपण कोणत्या पर्यायावर भर देता हे आपल्याला लिहावयाचे आहे. कदाचित दोनही ठिकाणी आपले उत्तर सारखे असेल किंवा वेगळेही असेल. या दोनही पर्यायात चूक किंवा बरोबर असे काही नाही. चारपैकी एकच पर्याय स्वत:साठी, त्याचप्रमाणे एकच पर्याय विद्यार्थ्यांसाठी निवडून तो पर्याय दर्शविणारे अक्षर रिकाम्या जागेत लिहावयाचे आहे.

| विधाने | स्वत: | विद्यार्थी |
|---|---|---|
| १)<br>अ) काम नीटनेटके, व्यवस्थित करणे<br>ब) हे विश्वची माझे घर ही वृत्ती अंगिकारणे<br>क) स्वत:ला पणाला लावणे<br>ड) नेतृत्व करणे. | ☐ | ☐ |
| २)<br>अ) सहकाऱ्यांशी सहानुभूतीने वागणे.<br>ब) समूहाला मार्गदर्शन करणे.<br>क) वडिलधाऱ्यांविषयी आदर बाळगणे.<br>ड) अवघड गोष्ट यशस्वीपणे करणे. | ☐ | ☐ |
| ३)<br>अ) वातावरणावर प्रभाव पाडणे.<br>ब) उत्तमतेचा आग्रह धरणे.<br>क) समाजाच्या गरजांचा विचार करणे.<br>ड) अंगी शिस्त बाणवणे. | ☐ | ☐ |
| ४)<br>अ) यशाची विविध शिखरे पादाक्रांत करणे.<br>ब) देशाची सेवा करणे .<br>क) वातावरणात बदल घडविणे.<br>ड) क्षमाशील असणे. | ☐ | ☐ |
| ५)<br>अ) देवावर श्रद्धा ठेवणे<br>ब) सर्वांशी प्रेमाने वागणे.<br>क) हाती घेतलेले काम तडीस नेणे.<br>ड) स्वत:ला पटलेली गोष्ट इतरांकडूनही करुन घेणे. | ☐ | ☐ |
| ६)<br>अ) मित्रांना, सहकाऱ्यांना मदत करणे.<br>ब) ज्या क्षेत्रात जाऊ तेथे प्रभाव पाडणे.<br>क) सत्याची कास धरणे.<br>ड) ज्या क्षेत्रात जाऊ तेथे यश मिळविणे. | ☐ | ☐ |

# Motivation Questionnaire (Intrinsic and Extrinsic Motivation)

**सूचना :**

खाली अ व ब पर्याय असलेली १४विधाने दिलीआहेत. ती वाचून अ व ब पैकी ज्या पर्यायाला तुम्ही प्राधान्य द्याल त्या पर्यायाखालील चौकोनात बरोबरची (✓) खूण करा. समजा एखाद्या जोडीतील दोन्ही पर्यायांपैकी एकाची निवड करणे अवघड आहे असे वाटत असले तरीही तुमच्या पसंतीच्या जवळ जाणारे विधान निवडा. तुम्हाला फक्त एकच पर्याय निवडायचा आहे. यात कोणताही पर्याय बरोबर किंवा चूक नाही.

| | | अ | ब |
|---|---|---|---|
| १) | अ- सहकाऱ्यांकडून आदर<br>ब- सहकाऱ्यांकडून कौतुक | ☐ | ☐ |
| २) | अ- आशावादी विचार<br>ब- मित्र मैत्रिणींकडून उत्तेजन | ☐ | ☐ |
| ३) | अ- मनाजोगते काम<br>ब- कामासाठी आवश्यक सुखसुविधा | ☐ | ☐ |
| ४) | अ- समजूतदार, सहानुभूतीपूर्वक वागणारे सहकारी<br>ब- उत्तमतेला आवाहन देणारे सहकारी | ☐ | ☐ |
| ५) | अ- नवनवीन गोष्टी शिकण्याच्या संधी<br>ब- आर्थिक सुरक्षितता | ☐ | ☐ |
| ६) | अ- निर्णयाबाबत स्वातंत्र्य<br>ब- बढतीच्या संधी | ☐ | ☐ |
| ७) | अ- नवीन जबाबदाऱ्या<br>ब- कामाच्या ठराविक वेळा | ☐ | ☐ |
| ८) | अ- विद्यार्थ्यांकडून आदर<br>ब- विद्यार्थ्यांकडून कौतुक | ☐ | ☐ |
| ९) | अ- पुरेसे मानधन<br>ब- आव्हानात्मक उद्दिष्टे | ☐ | ☐ |
| १०) | अ- स्वयंविकास<br>ब- विद्यार्थ्यांचा विकास | ☐ | ☐ |
| ११) | अ- सहकाऱ्यांचे उत्तेजन<br>ब- अंत:प्रेरणा | ☐ | ☐ |
| १२) | अ- चूक झाल्यास वरिष्ठ बोलतील ही भिती<br>ब- चूक झाल्यास आत्मविश्वास डळमळीत होईल ही भीती. | ☐ | ☐ |
| १३) | अ- राष्ट्रीय पुरस्कार<br>ब- व्यक्तिमत्त्व विकास | ☐ | ☐ |
| १४) | अ- वरिष्ठांकडून कौतुक<br>ब- आत्मप्रतिष्ठा | ☐ | ☐ |

**Values Checklist**

# ज्ञान प्रबोधिनी संशोधन संस्था

नाव : ________________ इयत्ता : __________ तुकडी : __________

शाळेचे नाव : ________________________________

तालुका : ________________ जिल्हा : __________ चाचणी दिनांक: __________

खाली प्रभावी शिक्षकाची एकूण २० गुणवैशिष्ट्ये दिलेली आहेत. ही २० गुण-वैशिष्ट्ये महत्वाची आहेत. आपल्या व्यक्तिमत्त्वात जास्त तीव्रतेने आढळणाऱ्या १० गुणवैशिष्ट्यांसमोर (+) अशी खूण करा व कमी तीव्रतेने आढळणाऱ्या १० गुणवैशिष्ट्यांसमोर (-) अशी खूण करा. जास्त तीव्रतेने आढळणाऱ्या १० गुणवैशिष्ट्यांपैकी त्यातल्या त्यात जास्त तीव्रतेने आढळणाऱ्या ५ गुणवैशिष्ट्यांपुढे पुन्हा एकदा (+) अशी खूण करा कमी तीव्रतेने आढळणाऱ्या १० गुणवैशिष्ट्यांपैकी सर्वात कमी तीव्रतेने आढळणाऱ्या ५ गुणवैशिष्ट्यांसमोर पुन्हा एकदा (-) अशी खूण करा. ज्या गुणवैशिष्ट्यांसमोर (++) अशी खूण असेल ती गुणवैशिष्ट्ये खाली दिलेल्या जागेत लिहून, प्रत्येक गुणवैशिष्ट्यांसमोर ते गुणवैशिष्ट्य दर्शविणारी, स्वत:शी निगडीत एखादी घटना, प्रसंग वा निर्णय त्या पुढे लिहायचा आहे.

१) आशावाद
२) शिस्तप्रियता
३) संवेदनशीलता
४) उत्तमता
५) लवचिकता
६) नाविन्यता
७) शिकण्याची इच्छा
८) एकात्मिकता
९) आत्मविश्वास
१०) योजकता (Resourcefulness)
११) समस्याकेंद्रितता (व्यक्तिपेक्षा समस्येला केंद्र मानणे)
१२) स्पर्धात्मकता
१३) पुढाकार (Initiative)
१४) सहकार्य
१५) प्रेरणादायी
१६) उद्दिष्ट व उद्दिष्टाप्रत जाण्याचा मार्ग यातील स्पष्टता
१७) स्वत:मध्ये व वातावरणात बदल घडवून आणण्याची क्षमता
१८) समजूतदारपणा
१९) उत्साह
२०) चिकाटी (सातत्य)

तीव्रतेने आढळणारी ५ गुणवैशिष्ट्ये

१) ________________________________

२) ________________________________

३) ________________________________

४) ________________________________

५) ________________________________

## Commitment

# ज्ञान प्रबोधिनी संशोधन संस्था

सदाशिव पेठ, पुणे ३०

नाव : ______________________________ दिनांक : ______________

शाळा : ______________________________

जिल्हा : ____________________ तालुका : ____________________

खाली प्रत्येक गटात एकूण ३ विधाने दिली आहेत. प्रत्येक विधानासमोरील चौकटीत आपल्या विचारांच्या व प्रत्यक्ष अनुभवाच्या जवळ जाणाऱ्या विधानाला प्राधान्यक्रमानुसार ३, २ किंवा १ हे अंक लिहा. कोणताही अंक एका गटात फक्त एकदाच लिहिता येईल. जे विधान आपल्याला अजिबात लागू नसेल त्याच्यापुढील चौकटीत N.A. (not applicable) असे लिहा. या प्रश्नावलीत कोणतेही उत्तर चूक किंवा बरोबर नाही. एखाद्या विधानावर फार जास्त वेळ विचार न करता उत्स्फूर्तपणे जे वाटेल तेच लिहा.

१. अ) आदर्श शिक्षकाचे व्यक्तिमत्त्व कसे असते याची माहिती असणे. ☐
ब) विद्यार्थ्यांनी विचारलेल्या शंकांना उत्तरे देणे. ☐
क) अध्यापन हा पेशा न मानता धर्म मानणे. ☐

२. अ) शिक्षणक्षेत्रातील नवीन प्रयोगांबद्दल सहकाऱ्यांशी चर्चा करणे. ☐
ब) अध्यापन करताना चर्चा व प्रयोगशीलता यांवर भर देणे. ☐
क) विविध क्षमता असलेल्या विद्यार्थ्यांच्या बाबतीत सहनशीलता दाखविणे. ☐

३. अ) अध्यापनातील उत्तमता गाठण्यासाठी नवीन शिक्षकांना मदत/मार्गदर्शन करणे. ☐
ब) दैनंदिन आयुष्यातील सहजसोपी उदाहरणे देऊन विषय शिकविणे. ☐
क) अध्यापन करताना आजूबाजूच्या वातावरणाचा विसर पडणे. ☐

४. अ) शिक्षक, विद्यार्थी परस्परपूरक असतात हे जाणणे. ☐
ब) उत्तरपत्रिका, गृहपाठ दिलेल्या मुदतीत तपासून पूर्ण करणे. ☐
क) शाळेत एखादी नवीन गोष्ट/उपक्रम सुरु करण्यात पुढाकार घेणे. ☐

५. अ) शिक्षणक्षेत्रातील एखाद्या प्रयोगात स्वेच्छेने सहभागी होणे. ☐
ब) शैक्षणिक साधने व सुविधा यांच्यासाठी अडून न राहता अध्यापन करणे. ☐
क) विद्यार्थ्यांच्या समस्यांबद्दल संवेदनशील असणे. ☐

६. अ) औपचारिक निवृत्तीनंतरही निरपेक्षवृत्तीने अध्यापन चालू ठेवण्याचा निश्चय करणे. ☐
ब) अध्यापन करताना विद्यार्थ्यांची देहबोली (body language) लक्षात घेणे. ☐
क) अध्यापन करताना होणारा स्वयंविकास आनंददायी वाटणे. ☐

७. अ) निरनिराळ्या अध्यापन तंत्रांची ओळख असणे. ☐
ब) शाळा/संस्थेच्या नियमांचे पालन करणे. ☐
क) अध्यापनशास्त्राच्या अभ्यासाला आवर्जून काही वेळ राखून ठेवणे. ☐

## Scholastic Achievement Test (SAT)

## ज्ञान प्रबोधिनी संशोधन संस्था

नाव ____________________
शाळा ____________________
इयत्ता __________ तुकडी __________ क्रमांक __________
तालुका __________ जिल्हा __________ चाचणी दिनांक :__________

खाली शालेय ज्ञानाविषयी काही प्रश्न विचारले आहेत. प्रत्येक प्रश्नात काय करायचे आहे त्याच्या सूचना दिल्या आहेत त्या वाचा व दिलेलया चार पर्यायांपैकी जो पर्याय उत्तराचा असेल त्याचा क्रमांक प्रश्नासमोरच्या चौकटीत लिहा.

**प्र. अ** खालील प्रश्नात एका सुसंगत परिच्छेदाची पाच वाक्ये दिलेली आहेत. त्यातील रिकाम्या जागी येणाऱ्या योग्य शब्दासाठी प्रत्येक वाक्याच्या खाली चार पर्यायी शब्द दिलेले असतात. परिच्छेदातील वाक्ये पूर्ण करण्यासाठी योग्य पर्यायाचा क्रमांक चौकटीत लिहा.

१) क्रिकेटचा सामना ------ तो परत आला. ☐
१)हरून २) बरोबरीत सोडवून ३) जिंकून ४) रद्द करून

२) सर्वांनी त्याचे ------ केले. ☐
१) सांत्वन २) अभिनंदन ३) थंडे स्वागत ४) येण्याकडे दुर्लक्ष

३) त्याने अत्यंत ------ त्याचा स्वीकार केला. ☐
१) नाखुषीने २) नम्रतेने ३) शांतपणे ४) दुःखाने

४) त्याच्या डोळ्यात ------ आले. ☐
१) आनंदाश्रू २) दुःखाश्रू ३) नक्राश्रू ४) पाणी

५) हे ------ गुरुजींच्या मार्गदर्शनाने मिळाले असे तो म्हणाला. ☐
१) अपयश २) निराशपण ३) प्रोत्साहन ४) यश

**प्र. ब** खालील शब्दातील गटात न बसणाऱ्या शब्दांचा क्रमांक चौकटीत लिहा.

१) १) गुलाब २) तुळस ३) मोगरा ४) जाई ☐
२) १) लढाई २) संभ्रम ३)संग्राम ४) युध्द ☐
३) १) प्रासाद २) धर्मशाळा ३) राऊळ ४) कुटीर ☐
४) १) कर २)शरीर ३) नयन ४) मुख ☐

# Students' Learning Orientation Profile (SLOP)

## ज्ञान प्रबोधिनी संशोधन संस्था

चाचणी दिनांक

नाव : ______________________ इयत्ता : __________ तुकडी : ________

शाळेचे नाव : ______________________________________

तालुका : ____________________ जिल्हा : ____________________

सूचना

खाली काही वाक्ये दिलेली आहेत. त्यापैकी काही वाक्यांशी तुम्ही सहमत असाल तर काही वाक्यांशी तुम्ही असहमत असाल. प्रत्येक वाक्य काळजीपूर्वक वाचा व कोणत्या वाक्याशी तुम्ही पूर्ण सहमत, सहमत किंवा पूर्ण असहमत, असहमत आहात ते ठरवा व त्याप्रमाणे वाक्यासमोरील चौकोनात खूण करा. आपली उत्तरे प्रामाणिकपणे द्या. येथे कोणतेही एक उत्तर बरोबर किंवा चूक असे नाही. खाली दिलेल्या वाक्यांबद्दल तुम्हाला काय वाटते ते आम्हाला पाहायचे आहे.

| | पूर्ण सहमत | सहमत | असहमत | पूर्ण असहमत |
|---|---|---|---|---|
| १) वर्गातील अभ्यासामुळे मला शिस्त लागते. | ☐ | ☐ | ☐ | ☐ |
| २) परीक्षेमध्ये कमी गुण मिळाले तरी मला अभ्यास करण्यात तितकाच आनंद वाटतो | ☐ | ☐ | ☐ | ☐ |
| ३) मी असा प्रकल्प करेन ज्यामध्ये मला नवीन कल्पना वापरता येतील. | ☐ | ☐ | ☐ | ☐ |
| ४) माझी आई माझे चाचणीतील गुण व अभ्यासातील प्रगती याची काळजी करीत नाही. | ☐ | ☐ | ☐ | ☐ |
| ५) मला आवडणाऱ्या विषयांची वेगळी अधिक पुस्तके वाचायला मला आवडते. | ☐ | ☐ | ☐ | ☐ |
| ६) मी चांगला अभ्यास करण्याचे कारण वर्गात पहिल्या नंबरचे बक्षिस मिळावे हे आहे. | ☐ | ☐ | ☐ | ☐ |
| ७) मी परीक्षेत चांगले यश मिळविल्यास सर्वजण माझ्याकडे कौतुकाने पाहतील. | ☐ | ☐ | ☐ | ☐ |
| ८) मला असे वाटते की परीक्षा हा शिक्षणातील महत्वाचा भाग आहे. | ☐ | ☐ | ☐ | ☐ |
| ९) मी अभ्यास करण्याचे कारण फक्त परीक्षा पास होणे हे आहे. | ☐ | ☐ | ☐ | ☐ |
| १०) वर्गात उत्तम यश मिळवल्यावर मला खूप आनंद होतो. | ☐ | ☐ | ☐ | ☐ |
| ११) ज्या विषयात मला अजिबात रस नाही अशा विषयातही मी काम करू शकेन. | ☐ | ☐ | ☐ | ☐ |

# APPENDIX VII

## Concept of Panchakosha : Nature and Scope

**Co-investigator - Shri. V.N. Abhyankar**

1) 'देहोऽयमन्न भवनोऽन्नमयस्तु कोश : । ( विवेक चूडामणी – १५६ )

**Material Sheath** (अन्नमय कोश)

Adi Shankaracharya has aptly described the relation between diet and physique in this shloka.The Material Sheath thus embodies physical development. It also includes the Ayurvedic concepts of seven basic elements (सप्तधातू), three deformities (त्रिदोष) and evacuation (मल) in it.

Adequate sleep, diet, exercise, yogasanas, pranayam are prime requirements for the proper development of body and senses. Thus a good physique ensures vigor and vitality of life

It is one's soul and not the body, that defines one's identity. This kind of awareness of limitations of human body is essential for adequate development of the Material Sheath.

2) 'प्राणो भवेत् प्राणमयस्तु कोशः । (विवेक चूडामणी – १६७) **Vital Sheath** (प्राणमय कोश)

Vital Sheath signifies the relationship between Astral and Causal bodies as related to bodily functions - Respiration, Blood circulation, Excretion, Vocalization, Digestion. It is also responsible for the controlled co-ordination.

The Vital Sheath sustains life. Moreover, it plays a major role in the development of other sheaths that must be viewed considering the finer aspects of the body and its independent functioning. Yogasanas and Pranayama help in the development of this sheath. Different sources of energy e.g. the chakras, are stimulated by Vital Sheath.

3) ज्ञानेंद्रियाणि च मनश्च मनोमयः स्यात् । (विवेक चूडामणी – १६९) **Mental and Emotional Sheath** (मनोमय कोश)

The development of Mental and Emotional Sheath has multiple dimensions. It begins with the interaction of an individual with the environment. It becomes significant when the individual receives an identity. One experiences the various emotions of love, hate, desire, attachment and contempt. Thus mind and sentiments are inseparable aspects of man's existence.

Nothing is sacred but the integrity of one's own mind. Detachment and moral rectitude keeps a check on the mind. A chaste mind alone can distinguish between the Eternal and the Ephemeral. Hence the development of Mental and Emotional Sheath is the key to personality development.

बुद्धिर्बुद्धीन्द्रियैः सार्धं सवृत्तिः कर्तृलक्षणः। (विवेक चूडामणी. १८६) **Intellectual Sheath** (विज्ञानमय कोश)

The senses and the intellect combine to serve as the window to the world. It develops our conscience and hence it makes the Intellectual Sheath distinct from others. Imagination, Image, Concept, Knowledge, Memory, Insight, Understanding, and Integral Understanding form the substance of Intellectual Sheath which directs one to the Eternal truth breaking all materialistic barriers and enlightening the mind.

आत्मनस्तु कामाय सर्व प्रियं भवति । (छादोग्योपनिषद) **Blissful Sheath** (आनंदमय कोश)

The blissful Sheath is characterized by a benevolent attitude and an ability to feel the divine essence in every individual. Creativity, Vision, Revelation, Agony and Ecstasy and Bliss form the aspects of Blissful Sheath. This Sheath develops with a growing sense of love, compassion for others. It exists in all three states of awakening, dream and deep slumber. One can reach to the state of complete exaltation by meditation, prayer and profound devotion to God.

## The concept of Panchkosha - In Retrospect

A reference from मुण्डकोपनिषद

मनोमयः प्राणशरीरनेता प्रतिष्ठितः अन्ने हृदयं संनिधाय ।
तद्विज्ञानेन परिपश्यन्ति धीराः आनन्दरूपम् अमृतं यद् विभाति ॥ (मुण्डकोपनिषद २.२.७)

Adi Shankaracharya elaborates the Panchkosha Philosophy in विवेक चूडामणि :

१. 'देहोऽयमन्न भवनोऽन्नमयस्तु कोश : । ( विवेक चूडामणी – १५६ )
२. 'प्राणो भवेत् प्राणमयस्तु कोशः । ( विवेक चूडामणी – १६७ )
३. ज्ञानेंद्रियाणि च मनश्च मनोमयः स्यात् । ( विवेक चूडामणी – १६९ )
४. बुद्धिर्बुद्धीन्द्रियैः सार्ध सवृत्तिः कर्तृलक्षणः ।( विवेक चूडामणी – १८६ )
५. 'आत्मनस्तु कामाय सर्व प्रियं भवति । ( छांदोग्योपनिषद )

Vidyaranya Swami elaborates the Panchkosha Philosophy in पंचदशी :

देहादभ्यन्तरः प्राणः प्राणादभ्यन्तरं मन ॥१॥
ततः कर्ता ततो भोक्ता गुहा सेयं परम्परा ॥२॥ (पंचकोश विवेक २,३,५,६,७,१०)

In the तैत्तिरीय उपनिषद Bhrugu the son of Varun, questions his father 'What is Brahma'?
He replies :

१. अन्न ब्रह्मेति व्यजानात् ।
२. प्राणो ब्रह्मेति व्यजानात् ।
३. मनो ब्रह्मेति व्यजानात् ।
४. विान्दानं ब्रह्मेति व्यजानात् ।
५. आनन्दो ब्रह्मेति व्यजानात् । (तैत्तिरीय उपनिषद)

ॐ पृथ्वी आप तेजो वायू आकाशा मे शुध्यन्ताम् ।
ॐ प्राण अपान व्यान उदान समाना मे शुध्यन्ताम् ।
ॐ शब्द स्पर्श रूप रस गन्धा मे शुध्यन्ताम् ।
ॐ मनो वाक् काय कर्माणि मे शुध्यन्ताम् ।
ॐ अन्नमय प्राणमय मनोमय विान्दानमय आनन्दमयामे शुध्यन्ताम् । (तैत्तिरीय उपनिषद)

Shri Lajjaram Tomar in the article 'व्यक्तित्व का सर्वांगपूर्ण स्वरुप – पंचकोश' in his book titled 'भारतीय शिक्षा मनोविज्ञानके आधार' has reiterated that Indian Psychology finds its roots in the Upanishads - where we find a mention of the five sheaths. Shri Arvind too has based different personality factors on the Upanishads, in the form of 5 sheaths.

In the book titled 'गायत्री की पंचकोशीय साधना एवं उपलब्धियाँ' by Shriram Sharma of Gayatri Parivar, we find an elaborate account of the fire sheaths from chapters 3 to 8 of Vol. 13.